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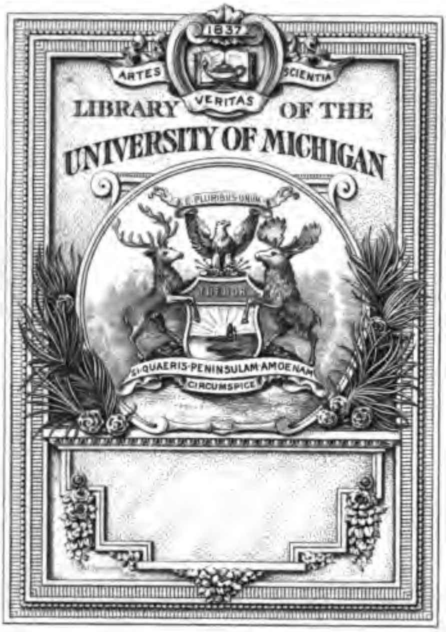
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ANNUAL REPORT

OF THE

WISCONSIN

State Horticultural Society

For the Year 1903.

Annual Meeting at Madison, February 3, 4, 5.
Semi-Annual Meeting at Omro, August 27.

VOL. XXXIII.

J. L. HERBST, Secretary,
SPARTA, WIS.

MADISON, WIS.
DEMOCRAT PRINTING CO., STATE PRINTER.
1903.

LETTER OF TRANSMITTAL.

To the Hon. ROBERT M. LA FOLLETTE,
Governor of Wisconsin.

Dear Sir:—I have the honor of presenting to you, as is required by law, the thirty-third annual report of the transactions of the State Horticultural Society, embracing the papers read and the discussions which followed at our yearly meetings, one of which was held in the city of Madison in February, 1903, and the other in the city of Omro in August of the same year.

We have also published the reports of the several local societies in the state. We also show the amount of money received from the state and the manner the same has been disbursed during the year.

All of which is respectfully submitted.

J. L. HERBST,
Secretary.

Sparta, Wis., November, 1903.

166270

WISCONSIN STATE HORTICULTURAL SOCIETY.

OFFICERS, 1904.

T. E. Loope, President	Eureka
Geo. J. Kellogg, Vice-President	Lake Mills
F. Cranefield, Secretary	Madison
L. G. Kellogg, Treasurer	Ripon
W. A. Toole, Cor. Secretary	Baraboo

EXECUTIVE COMMITTEE.

T. E. Loope, Chairman	Ex-Officio
F. Cranefield	Ex-Officio
Geo. J. Kellogg	Ex-Officio
L. G. Kellogg	Ex-Officio
1st Dist., W. J. Moyle	Union Grove
2d Dist., S. H. Marshall	Madison
3d Dist., Wm. Toole	Baraboo
4th Dist., Arthur Wright	Milwaukee
5th Dist., F. W. Harland	Waukesha
6th Dist., Geo. C. Hill	Rosendale
7th Dist., J. J. Menn	Norwalk
8th Dist., W. P. Bussey	Omro
9th Dist., Irving Smith	Green Bay
10th Dist., A. L. Kreutzer	Wausau
11th Dist., C. L. Richardson	Chippewa Falls

TABLE OF CONTENTS.

Page

Letter of transmittal iii

Act of re-organization and laws relating to society ix
Chapter 151, laws of 1879, as amended ix
Chapter 526, laws of 1889 x
Chapter 417, laws of 1889 xi
Section 1459, statutes of 1898, as amended xi
Section 1459*a*, statutes of 1898 xii
Chapter 250, laws of 1903 xii

Constitution xiv
By-laws xv
Members of society xvi
Business cards of members xxii
Officers of 1902 xxiii

Committees—

Executive xxiii
Nomenclature xxiii
Legislation xxiii
Finance xxiii
Revision of fruit list xxiv
Resolutions xxiv
On trial orchards xxiv

Superintendents of trial orchards xxiv

Trial orchards xxiv

Fruit list xxv
Apples xxv
Plums xxvii
Cherries xxviii
Strawberries xxix
Grapes xxx
Raspberries xxxi
Blackberries and dewberries xxxii
Currants xxxiii
Gooseberries xxxiv

Trees and shrubs recommended xxxv

Page

Transactions of Annual Winter Meeting 1
  New Varieties of Apples, F. H. Chappel 2
  Apples Safe to Plant in Wisconsin, A. Clark Tuttle 5
  Crab Seedlings for Apple Root Grafts, A. D. Barnes 12
  Commercial Orcharding in Wisconsin, J. G. Buehler 17
  Commercial Orcharding, Geo. T. Tippin 13
  Failure of Apples in Parts of the State 24
  Reports of Trial Orchard, J. L. Herbst, L. G. Kellogg, S. F. Harris 37
  Vegetable Growing Under Glass, A. C. McLean 40
  Horticultural Education, H. Breckenstratter 44
  Pollination, C. L. Meller 48
  Horticulture as an Industry for Women, Miss M. E. Benson .. 51
  Care of Farm Orchards, J. C. Shottler 55
  Planting a Young Orchard on a Farm, J. P. Bonzelet 58
  Horticulture in the Schools, J. W. Livingstone 62
  Report of Delegate to Minnesota, Dr. T. E. Loope 71
  Report of Delegate to Iowa, S. H. Marshall 73
  Report of Delegate to Northern Illinois, A. J. Edwards 75
  Report of Delegate to Illinois State Meeting, F. Cranefield.. 76
  Report of Delegate to Northeastern Iowa, W. J. Moyle 78
  Report of Delegate to Michigan, Irving Smith 79
  Growing Vegetables, John Vanloon 82
  Blight, F. Cranefield 88
  Reports from Local Societies 93
  Plant Breeding, Prof. A. T. Irwin 97
  Plum Culture, F. Cranefield 103
  The American Plum in Wisconsin, S. H. Marshall 107
  Cover Crops, Prof. E. P. Sandsten 114
  Cranberry Culture, J. A. Gaynor 120
  Tree Digging, M. S. Kellogg 125
  Report of Judges 129
  Annual Address, President Loope 131
  Report of Secretary, J. L. Herbst 133
  Report of Treasurer, L. G. Kellogg 137
  Election of Officers 141
  The Strawberry, J. L. Reasoner 142
  New Strawberries, Geo. J. Kellogg 147
  Prelude, Fanny K. Earle 153
  An Ideal Citizenship, Mrs. S. G. Floyd 161
  Horticultural Work for Women, Mrs. Mae L. Bradt 163
  Hardy Perennials, W. J. Moyle 166
  How to Grow Pears in Central Wisconsin, J. S. Shultz 171
  Report of Committee on Resolutions 176
  Memorial Session 178

Page

Summer Meeting.

Address of Welcome, Mayor W. G. Rhodes 193
Use of Hot-beds for Growing Plants, Irving Smith 195
Use and Abuse of Flower Gardens, Edwin B. Skewes 201
Home Grounds, Delbert Utter 207
Plums, F. Cranefield 212
Roses, Mrs. Trelevan 216
Gladiolus, W. J. Moyle 221
Growing Dahlias, B. M. Vaughn 225
Herbaceous Perennials, F. C. Edwards 228
Ornamental Climbers, William Toole 237
Amateur Canning, R. R. Remington 245
Fertilization of Flowers, Miss Jennie Chappell 252
Report of Judges.
Fruit 257
Flowers 258
The Farmer's Daughter a Help in Beautifying Country Homes, Mrs. Trelevan 260
Memorial Address 264

ACT OF RE-ORGANIZATION

AND LAWS RELATING TO THE

WISCONSIN STATE HORTICULTURAL SOCIETY.

CHAPTER 151, LAWS OF 1879, AS AMENDED BY CHAPTER 14, LAWS OF 1887.

Section 1. The executive committee of the Wisconsin State Horticultural Society shall hereafter consist of the president, secretary and treasurer of said society, and of one member from each congressional district of the state, said members from the congressional districts to be chosen annually by the county and local horticultural societies in their respective districts.

Section 2. The present officers and executive committee of said society shall hold their respective offices until the Tuesday next succeeding the first Monday in February, and until their successors are appointed.

Sestion 3. It shall be the duty of said society to aid in the formation and maintenance of county and local horticultural societies, to promote the horticultural interests of the state by the holding of meetings for discussion; by the collection and dissemination of valuable information in regard to the cultivation of fruits, flowers and trees adapted to our soil and climate, and in every proper way to advance the fruit and tree growing interests of the state.

Section 4. The annual meeting of the society for the election of its officers, the transaction of general business, and the consideration of questions pertaining to horticulture, shall be held at such time and place as may be determined at the last preceding annual meeting. In case of the failure of such meeting to so determine, the executive board may call such meeting by giving at least thirty days' notice to each member of the society.

Section 5. All vacancies in the offices of said society may be filled by the executive committee; and should there be a failure to elect a member of the executive committee in any district, the vacancy may be filled by a two-thirds vote of the members of the society present at any regular appointed meeting.

Section 6. It shall be the duty of the secretary of said society to make an annual report to the governor of the state of the transactions of the society, including an itemized account of all moneys expended during the year, in addition to such matters as are now specified in the law relating to the same.

CHAPTER 526, LAWS OF 1889.

Section 5. And further, there shall be printed annually upon the approval and order of the commissioners of public printing, ten thousand copies of the transactions of the Wisconsin State Agricultural Society, the same to embrace the reports of the county and other agricultural societies, and such matters pertaining to the agricultural industries of the state as shall be deemed important, provided the whole number of printed pages shall not exceed four hundred. Seven thousand copies of the transactions of the Wisconsin State Horticultural Society, the same to embrace such abstracts of reports of county and other horticultural societies, and such matters pertaining to the horticultural interests of the state as shall be deemed important, provided that the whole number of printed pages shall not exceed two hundred. Eight thousand copies of the transactions of the State Dairymen's Association, the same to embrace such other matters pertaining to the dairy interests of the state as shall be deemed essential, provided that the whole number of printed pages shall not exceed two hundred. Twelve thousand copies of the report of the Agricultural Experiment Station of the State University, provided that the whole number of printed pages shall not exceed two hundred and fifty. Two thousand copies of each of said reports to be bound separately in cloth, all others singly in paper.

Section 6. The report provided for in the preceding section shall be distributed as follows, through the superintendent of public property: Fifteen copies to each member of the legislature, fifty copies to the State Horticultural Society, ten copies to each county agricultural society, and district industrial association, which embraces two or more counties and furnishes the State Agricultural Society a report of its proceedings, to each of the four societies named in the preceding section, fifty copies of each of the reports of the other three societies, twenty-five copies of each of the reports to the library of the state university; to the governor, lieutenant-governor, secretary of state, state treasurer, attorney general, state superintendent of public instruction, railroad commissioner and insurance commissioner, twenty-five copies each; to the state superintendent of agricultural institutes, fifty copies; to the superintendent of public property, commissioner of labor statistics, adjutant-general, quartermaster general, state board of health, each ten copies; to each public library in the state, two copies; to each state normal school, two copies; to each of the state charitable and penal institutions, one copy; and the remaining copies to the respective societies for distribution by their secretaries.

Section 7. In no case shall the number of printed pages in any report provided for in the act exceed the maximum number specified, except upon written request of the officers submitting the same, and then only upon previous written approval of a majority of the commissioners of public printing, such application and approval to be filed with the secretary of state.

CHAPTER 417, LAWS OF 1889.

Section 1. The governor is hereby authorized to set apart by proclamation one day in each year to be observed as a tree planting or arbor day, requesting all public schools and colleges to observe the same by suitable exercises, having for their object the imparting of knowledge of horticulture, in the department known as arboriculture, and the adornment of school and public grounds.

Section 2. This act shall take effect and be in force from and after its passage and publication.

Approved April 16, 1889.

PURPOSES OF; APPROPRIATION.

Section 1459, Statutes of 1898, as amended by Chapter 320, Laws of 1901.

Section 1459. The Wisconsin State Horticultural Society is a body corporate by that name, with the general powers and privileges of a corporation so far as applicable. It shall be the duty of the society to aid in the formation and maintenance of county and local horticultural societies, to promote the horticultural interests of the state by holding meetings for discussion thereof, by the collection and dissemination of information in regard to the cultivation of fruits, flowers and trees adapted to the soil and climate of this state, and in other proper ways to advance the fruit and tree growing interests thereof; and for such purposes only it may take, hold and convey real and personal property, the former not exceeding five thousand dollars in value. For the purpose of aiding in the accomplishment of such objects the society shall be entitled to receive twenty-two hundred and fifty dollars annually from the state treasury, two hundred and fifty dollars of which shall be for the maintenance of experiment stations.

EXECUTIVE COMMITTEE; SECRETARY'S REPORT.

Section 1459a, Statutes of 1898.

Section 1459a. The executive committee of said society shall consist of the president, secretary and treasurer thereof, and one member from each congressional district in the state, these to be chosen annually by the county and local horticultural societies in the respective districts at such time and in such manner as the state society may prescribe. The executive committee may fix the time and place for holding the annual meeting of the state society, if the last meeting thereof failed to do so, and may call such meeting by giving at least thirty days' notice to each member; said committee may also fill all vacancies in the offices of the society, and if a member of such committee is not elected from any congressional district the vacancy may be filled by a vote of two-thirds of the members of the society present at any regularly appointed meeting. The secretary of the society shall make, in October of each even-numbered year, a report to the governor of the transactions thereof, including an itemized account of all moneys expended since the last report was made.

No. 224, S.] [Published May 16, 1903.

CHAPTER 259.

AN ACT to amend section 1459 of the statutes of 1898 as amended by chapter 320 of the laws of 1901, relating to the state horticultural society and making an appropriation.

The people of the State of Wisconsin, represented in senate and assembly, do enact as follows:

Section 1. Section 1459 of the statutes of 1898 as amended by chapter 320 of the laws of 1901 is hereby amended by striking out the words "twenty-two hundred and fifty dollars" where the same appear in said section 1459 as amended, and by inserting in lieu thereof the words "four thousand dollars," so that said section when so amended shall read as follows: Section 1459. The Wisconsin state horticultural society is a body corporate by that name, with the general powers and privileges of a corporation so far as applicable. It shall be the duty of the society to aid in the formation and maintenance of county and local horticultural societies, to promote the horticultural interests of the state by holding meetings for discussion thereof, by the collection and dissemination of information in regard to the cultivation of fruits, flowers and trees adapted to the soil and climate of this state, and in other proper ways to advance the fruit and tree growing interests thereof; and for such purposes only it may take, hold and convey real and personal property, the former not exceeding five thousand dollars in value. For the purpose of aiding in the accomplishment of such subjects the society shall be entitled to receive four thousand dollars annually from the state treasury, two hundred and fifty dollars of which shall be for the maintenance of experiment stations.

Section 2. This act shall take effect and be in force from and after its passage and publication.

Approved May 14, 1903.

CONSTITUTION AND BY-LAWS.

CONSTITUTION.

Article 1. This society shall be known as the Wisconsin State Horticultural Society.

Article II. Its object shall be the advancement of the art and science of horticulture throughout the state.

Article III. Its members shall consist of *annual* members, paying an annual fee of one dollar, which also shall entitle the wife of such member to the privileges of full membership; of secretaries of local horticultural societies reporting to the state society, who shall be considered members *ex-officio*; of *life* members paying a fee of five dollars at one time; of *honorary life* members, who shall be distinguished for merit in horticultural and kindred sciences, or who shall confer any particular benefit upon the society; and *honorary annual* members, who may by vote, be invited to participate in the proceedings of the society.

Article IV. Its officers shall consist of a President, Vice-President, Recording Secretary, Corresponding Secretary, Treasurer, Superintendent and an Executive Board, consisting of the foregoing officers and additional members, one from each congressional district of the state, five of whom shall constitute a quorum at any of its meetings. In addition to the foregoing officers, the presidents of all local horticultural societies reporting to this society shall be deemed honorary members and *ex-officio* vice-presidents of this society. All officers shall be elected by ballot, and shall hold their office for one year thereafter, and until their successors are elected; provided, the additional executive members may be elected by the county or local horticultural societies of their respective districts.

Article V. The society shall hold its annual meeting for the election of officers, commencing on the first Monday in February. It may also hold a meeting in December of each year, at such place and time as may be decided upon by the society, or the executive committee for the exhibition of fruit and for discussions, and such other meeting for discussions and exhibitions as the executive committee may direct, at such time and place as the executive board shall designate.

Article VI. This constitution, with the accompanying by-laws, may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

I. The president shall preside at meetings, and, with the advice of the recording secretary, call all meetings of the society, and have general supervision of the affairs of the society, and shall deliver an annual address upon some subject connected with horticulture.

II. The vice-president shall act in the absence or disability of the president, and perform the duties of the chief officer.

III. The secretary shall attend to all the correspondence, shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports. He shall also present a detailed report of the affairs of the society at its annual meeting. He shall also endeavor to secure reports from the various committees, and from local societies of the condition and progress of horticulture in the various districts of the state and report the same to the society. It shall be the duty of the secretary to make an annual report to the governor of the state of the transactions of the society, according to the provisions of the statutes for state reports.

IV. The treasurer shall keep an account of all moneys belonging to the society and disburse the same on the written order of the president countersigned by the secretary, and shall make an annual report of the receipts and disbursements, and furnish the secretary with a copy of the same on or before the first day of the annual meeting. The treasurer elect shall, before entering upon the discharge of the duties of his office, give good and sufficient bonds for the faithful performance of his duties subject to the approval of the executive committee.

V. The executive board may, subject to the approval of the society, manage all its affairs and fill vacancies in the board of officers; three of their number, as designated by the president, shall constitute a finance committee.

VI. It shall be the duty of the finance committee to settle with the treasurer and to examine and report upon all the bills or claims against the society which may have been presented and referred to them.

VII. The standing committees of this society shall be as follows: 1st, Committee on finance, consisting of three members; 2d, Committee on nomenclature and new fruits, consisting of three members; 3rd, Committee on observation, as now provided. Said committee to be appointed annually by the executive committee of the society.

MEMBERS OF THE SOCIETY.

LIFE.

Ames, W. L.	Oregon, Wis.
Allis, Frank W	Madison, Wis.
Babcock, O. W	Omro, Wis.
Barnes, A. D	Waupaca, Wis.
Chappel, F. H	Oregon, Wis.
Chandler, Jr., S. S	Waupaca, Wis.
Converse, D. C	Ft. Atkinson, Wis.
Carpenter, L. A	Fond du Lac, Wis.
Edwards, F. C	Ft. Atkinson, Wis.
Eaton, B. A	South Milwaukee, Wis.
Foley, M. F	Baraboo, Wis.
France, N. E	Platteville, Wis.
Floyd, Henry	Eureka, Wis.
Harden, F. A	Weyauwega, Wis.
Johnson, Franklin	Baraboo, Wis.
Kellogg, Geo. J	Lake Mills, Wis.
Kellogg, M. S	Janesville, Wis.
Kreutzer, A. L	Wausau, Wis.
Kierstead, E. H	Oregon, Wis.
Loope, T. E	Eureka, Wis.
Marshall, S. H	Madison, Wis.
McGregor, E. L	Appleton, Wis.
Raymer, George	Madison, Wis.
Seubert, John	Cologne, Minn.
Seymour, A. N	Mazomanie, Wis.
Simonson, Andrew	Racine, Wis.
Taylor, Will L	Mt. Hope, Wis.
Tilson, Mrs. Ida E	West Salem, Wis.
Underwood, J. M	Lake City, Minn.
Vaughn, B	Grand Rapids, Wis.
Wright, Arthur	Milwaukee, Wis.

HONORARY LIFE MEMBERS.

Bailey, L. H	Ithaca, N. Y.
Case, F. W	Chicago, Ill.
Hinkley, M. E	Mt. Vernon, Iowa.
Patten, C. G	Charles City, Iowa.
Phoenix, F. H	Delevan, Wis.
Philips, A. J	West Salem, Wis.
Stickney, J. S	Wauwatosa, Wis.
Trelease, Wm	St. Louis, Mo.
Tuttle, A. G	Baraboo, Wis.
Wiley, O. S	Madison, Wis.

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Tippin, Geo. T	Nicholas, Mo.
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Thompson, H. T	Marengo, Ill.
Periam, Jonathan	Chicago, Ill.
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Irwin, A. T	Ames, Iowa.
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Floyd, Mrs. S. G	Eureka, Wis.
Updyke, E. J	Madison, Wis.
Cronk, C. F	Madison, Wis.
Jacobson, Miss Emma	Chicago, Ill.
Livingstone, J. W	Stevens Point, Wis.

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Abbott, C. A	R. D. No. 1, Appleton, Wis.
Ames, E. R	Gilmanton, Wis.
Bussey, W. P	Omro, Wis.
Buehler, J. G	Ithaca, Wis.
Brown, H. N	Hartland, Wis.
Broom, Richard	R. D., Stoughton, Wis.
Buck, J. P	Appleton, Wis.
Bradt, Mrs. Mae	Eureka, Wis.
Benson, Miss M. E	Milwaukee, Wis.

Bass, S. O	Mauston, Wis.
Brigham, Chas. I	Blue Mounds, Wis.
Bernet, E. J	1103 South 7th Street, La Crosse, Wis.
Burnham, Marcus	Waupaca, Wis.
Bible, W. N	Cazenovia, Wis.
Buck, Mrs. Geo	Omro, Wis.
Conover, F. C	Madison, Wis.
Cheney, L. S	Madison, Wis.
Carncross, J. E	Okee, Wis.
Coe, R. J	Ft. Atkinson, Wis.
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Conant, W. A	17 Milk St., Boston, Mass.
Cooper, J. H	R. D. No. 7, Milwaukee, Wis.
Carroll, Richard C	St. Anthony Park, Minn.
Cairnes, Gertrude M	Ellsworth, Wis.
Christianson, H. C	Oshkosh, Wis.
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Everitte, C. H	Racine, Wis.
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Fagg, Peter	Madison, Wis.
Finkle, G. L	Appleton, Wis.
Floyd, Mrs. S. G	Eureka, Wis.
Farnhan, Ernest	Stevensville, Wis.
Fairbanks, Z. C	Traverse City, Mich.
Gibbs, Oliver	Prescott, Wis.
Gaynor, J. A	Grand Rapids, Wis.
Hatch, A. L	Sturgeon Bay, Wis.
Howie, Jno	Waunakee, Wis.
Herbst, J. L	Sparta, Wis.
Hembrook, F. H	Waterford, Wis.
Hoops, Robert	New London, Wis.
Huffman, J	Monroe, Wis.
Holmes, W. H	Waupaca, Wis.
Hang, H	Box 78, Graettinger, Iowa.
Hager, W. S	Hickory, Wis.

Huntley, Mrs. D.	Lake Mills, Wis.
Hatch, C. A.	Richland Center, Wis.
Hall, W. M.	Rush Lake, Wis.
Howlett, Mrs. Marcia	Oshkosh, Wis.
Harland, F. W.	Waukesha, Wis.

Ihrig, J. J.	Oshkosh, Wis.

Johnson, H. C.	Gates Mills, Ohio
Jones, G. D.	Wausau, Wis.
Jeffrey, Geo. J.	629 7th St., Milwaukee, Wis.

Kelley, A. N.	Mineral Point, Wis.
Kaufman, Herman	Marshfield, Wis.
Kellogg, L. G.	Ripon, Wis.
Kenrick, W. J.	Station B, Milwaukee, Wis.

LaFay, Wm.	Stoughton, Wis.
Landweer, G.	Medford, Wis.
Logan, R. J.	Greenfield, Wis.
Loope, A. I.	North East, Penn.
Laiten, L. F.	Omro, Wis.

Menn, J. J.	Norwalk, Wis.
Moyle, W. J.	Yorkville, Wis.
McLay, G. R.	Janesville, Wis.
Milward, James	Madison, Wis.
McKee, E. E.	Picketts, Wis.
Miller, E. L.	1302 State St., Milwaukee, Wis.
McLean, A. C.	703 State St., Madison, Wis.
Mutch, S. S.	Elroy, Wis.
Mutschman, A. T.	Boscobel, Wis.
Mueller, Miss E. T.	Calhoun, Wis.
Main, A. G.	Hortonville, Wis.

Nye, Edwin	Appleton, Wis.
Nelson, J. N.	Waupaca, Wis.
Nichol, Edner S.	Seymour, Wis.
Noyes, J. B.	Oshkosh, Wis.

Ovenden, F.	Madison, Wis.
Olson, James P.	Ripon, Wis.

Payton, A. J.	Oshkosh, Wis.
Pearsons, C. L.	Baraboo, Wis.

Pfaender, Wm	New Ulm, Minn.
Philipson, C.	Oshkosh, Wis.

Richardson, C. L.	Chippewa Falls, Wis.
Reek, Joseph	Neenah, Wis.
Rheingans, E. C.	Chippewa Falls, Wis.
Rundell, H. F.	Livingston, Wis.
Reynolds, E. M.	Prescott, Wis.
Rusti, C. O.	Blue Mounds, Wis.
Ramsey, Mrs. Robert	Baraboo, Wis.
Ramsdell, C. H.	Menomonee, Wis.
Reitbrock, Fred	107 Wisconsin St., Milwaukee, Wis.
Remington, R. R.	Baraboo, Wis.

Smith, Irving C.	Green Bay, Wis.
Smith, S. S.	Green Bay, Wis.
Stark, Frank	Randolph, Wis.
Spry, Jno	Ft. Atkinson, Wis.
Schultz, J. L.	Lake Mills, Wis.
Street, H. G.	Hebron, Ill.
Smith, G. B.	Green Bay, Wis.
Skewes, Edwin B.	Union Grove, Wis.
Sandsten, E. P.	Madison, Wis.
Sidney, J. A.	Poplar, Wis.
Sheldon, E. T.	Omro, Wis.
Sperbeck, M. V.	Oshkosh, Wis.
Stead, Mrs. E.	Omro, Wis.
Steele, W. H.	Pewaukee, Wis.
Smith, B. H.	Tiffany, Wis.

Toole, Wm	Baraboo, Wis.
Toole, W. A.	Baraboo, Wis.
Tracy, Ernest E.	Wonewoc, Wis.
Trelevan, Mrs. Joseph	Omro, Wis.
Trelevan, Joseph	Omro, Wis.
Tieman, Mrs. Sarah	Eureka, Wis.
Thrall, Mrs. W. E.	Omro, Wis.
Thompson, Chester J.	New London, Wis.

Utter, Delbert	Caldwell, Wis.
Utermark, C. I. L.	Somerset, Wis.

Vanlcon, John	La Crosse, Wis.

Whitcomb, R. C.	Monroe, Wis.
Williams, Daniel	Oconomowoc, Wis.
Williamson, W. D.	Madison, Wis.
Zahrt, F. H.	Hortenville, Wis.

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Chappell, F. H., Oregon, grower and dealer in nursery stock.
Coe, Converse & Edwards Co., Ft. Atkinson, general nursery.

France, N. E., Platteville, State Bee Inspector.
Hardin, F. A., Weyauwega, small fruit grower and nursery.
Hatch, A. L., Sturgeon Bay, nursery and small fruits.
Houser, John F., Onalaska, small fruits and vegetables.
Hanchett, Will, Sparta, small fruit grower.
Herbst, J. L., Sparta, small fruit and poultry.

Kellogg, L. G., Ripon, small fruit a specialty.
Kellogg, George J., & Sons, Janesville, Belle Cottage Fruit Farm.
Kreutzer, A. L., fruit and stock farm.

Loope, T. E., Eureka, orchard and small fruits.

Marshall, S. H., Maple Bluff Farm, Madison, Wis., plums and cherries.

Philips, A. J., West Salem, Guernsey cattle and nursery.

Riley, A. S., Pardeeville, nursery stock in general.

Seymour, A. N., Mazomanie, small fruits.
Smith, I. C., Green Bay, vegetables and small fruits.
Spry, John, Ft. Atkinson, grower of small fruits and plants.
Smith, G. B., Green Bay, gardener and seed potatoes.

Tuttle, A. G., Baraboo, small fruits.
Toole, William, Baraboo, pansy specialist.

Underwood, J. M., Lake City, Minn., Jewell nursery.

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TRIAL ORCHARDS.

Wausau. Eagle River. Medford. Poplar.

FRUIT LIST.

A LIST OF FRUITS GROWN BY MEMBERS OF THE WISCONSIN STATE HORTICULTURAL SOCIETY,

As catalogued by the Wisconsin State Horticultural Society. Those marked with an asterisk (*) are recommended for Wisconsin.

APPLES. (Pyrus.)

Section I.—CRABS.

[Key.—Size, scale 1 to 10; 1, very small; 10, very large. Form: c, conical; i, irregular; o, oblate; ob, oblong; ov, ovate; r, round Color: d, dark; g, green; r, red; ru, russett; s, striped; w, white; y, yellow. Flavor: a, acid; m. mild; s. sweet. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: c, cider; d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am, America; Eng, England; Eur, Europe; Fr, France; Ger, Germany; Hol, Holland; Ont, Ontario; Rus, Russia; Scot, Scotland.]

Name.	Description.						
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.
Briar	7	r	r	5	e m	k m	Wis.
*Martha	5	o	y r	5-6	e	k m	Minn.
Minnesota	10	ob	y r	5	e	k m	Minn.
Transcendent	7-8	r	y r	5-6	e	k m	Am.
*Whitney	8	r c	r	8-9	e m	d k m	Ill.
*Gibb	6	o	y r	9	e	k	Wis.
*Virginia	5	r ob	y r	5	....	....	
Spitzenberg	5	ob	r	10	l	k d	Wis.
Lyman	....	....	....	....	....	....	

Section II.--APPLES.

*Avista	9	r c	y g	5-7	l	d k m	Wis.
Arabka	9	ob c	y g	5-7	e	d k m	Russ.
Alexander	9-10	o c	y r s	5	m	k m	Russ.
*Anisim	4-5	r c	y r	7	m	d m	Russ.
Antonovka	6	ov c	y	7	m	k m	Russ.
Arctic	7-8	r c	y r	8	l	k m	N. Y.
Babbitt	5-6	r	r	5-6	l	d k m	Mo.
Bailey	8-9	r	r	7-8	l	d m	N. Y.
*Ben Davis	6-9	r ov	y r s	4-5	l	m	Ky.
Blue Permain	....	....	....	....	....	....	
*Charlamoff	5-6	r c	g r s	6	e	d m	Russ.
Dominion Winter	....	....	....	....	....	....	
Early Harvest	5-6	r o	y w	9	v e	d k	Am.
Early Joe	3-4	o c	y r s	8-9	e	d	N. Y.
*Eureka	6-8	r ob	g y r	6-7	l	d k m	Wis
*Fall Orange	8-9	r	y r	3-4	m	k	Mass.
*Fall Spitzenberg	6-8	r c	g y	7-8	l	d k m	Va.
Fall Wine	5-6	r o	y r	8-9	m	d	Am.
*Fameuse	5-0	r o	y r s	8-9	m	d m	Fr.

Section II.—APPLES—Continued.

NAME.	DESCRIPTION.						
	Size.	Form.	Color.	Quality.	Season	Use.	Origin.
*Golden Russett	4-6	r o	y ru	5-6	v l	d m	Eng.
*Grimes Golden	5-6	r o c	y	9-10	l	d	Va.
*Hass.	5-7	o c	g y r	4-6	e m	k m	Mo.
Hibernal	5-7	o b c	r s	3-5	m	k m	Rus.
Jonathan	5-6	r c	y r	8-9	l	d k m	N. Y.
Lowland Raspberry	......	......	......	......	......	......	
*Longfield	5-6	r c	y	4-5	e	k	Rus.
Louise	......	r o	w e	5-6	l	d	Ont.
Lowe	8-9	ob	y	6-7	e	k m	Am.
Lowell	8-9	ob	y	7-8	e	k m	Am.
*Lubsk Queen	6-7	r	r	6-7	l	d m	Rus.
*McMahan	8-9	r o	y w	4-5	m	d m	Wis.
Maiden Blush	5-6	o	y r	5-6	e	k m	N. J.
*Malinda	6-7	r c	y r	5-6	v l	d k m	Vt.
Mann	6-7	r o	y g	4-5	v l	m k	N. Y.
*Milwaukee	7-8	r o	y r s	5-6	l	k m	Wis.
*Minkler	6-7	r c	g y r	6-8	l	m	Pa.
*Newell	7-8	rob	y r s	5-6	l	k m	Wis.
Northern Spy	8-9	r o c	y r s	8-9	m l	d k m	N. Y.
*N. W. Greening	8-9	r c	g y	6	l	k m	Wis.
*Okabena	5	r ob	r s	4-6	m e	k m	Minn.
*Oldenburg	5-6	o	y r s	4-5	e	k m	Rus.
*Pattens Greenings	8-9	r	y	5-6	m l	k m	Iowa.
Peerless	5	o r	s	5-8	l	m	Minn.
Perry Russett	5-6	r c	y ru	5-6	m l	d k	N. Y.
*Peter	7-8	r	g y	6-7	m	k m	Minn.
*Pewaukee	8-9	r o	y r s	4-5	l	k m	Wis.
*Plumb Cider	5-6	r c	y r s	5-6	m	d m	Wis.
Pound Sweet	8-9	r	g w	5-6	m l	k	Conn.
Pittsfield Striped	......	......	......	......	......	......	
*Raspberry	3-4	ob i	r	6-7	m e	k m	Rus.
*Red Astrachan	7-8	r c	r g y	5-6	e	k m	Rus.
*Repka	3-4	r c	r s	5	l m	k	Rus
Roman Stem	5-6	r	w y r	8-9	l	d k	N. J.
Salome	5-6	r ob	y r	7-8	v l	d k m	Ill.
*Scotts Winter	5	r c	r s	5-7	l	k m	Vt.
Sops of Wine	5-6	r	y r	5-6	e	d	Eur.
Switzer	5-6	r	w r	6-7	e	k	Rus.
*Tetobki	7-8	o c i	y r s	5-6	m	k m	Rus.
*Talman Sweet	5-6	r o	y	6-7	l	k m	R. I.
Twenty Ounce	9-10	r	y r s	6-7	m l	k m	Conn.
*Utter	7-8	r	y r	6-7	m	d m	Am.
*Walbridge	5-6	o c	y r s	5-6	l	m	Ill.
*Wealthy	6-7	r o	y r s	6-7	m	d k m	Minn.
*Willow Twig	6-6	r o c	y r	5-6	v l	m	Va.
*Winsdor	5-6	r	y r	6	l	m	Wis.
*Wolf River	9-10	r o	w r s	5-6	m	k m	Wis.
*Yellow Transparent	6-7	r c	w y	5-6	e	k m	Rus.
Yellow Sweet	......	......	......	......	......	......	

PLUMS. (Prunus.)

[Key.—Size, scale 1 to 10. 1, very small; 10, very large. Form: c, compressed; f, flattened; o, oval; ob, obovate; obl, oblong; r, round. Color: b, black; br, brown; g, green; p, purple; r, red; v, violet; w, white; y, yellow. Quality: scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market; c, curing. Abbreviations of names of places of origin: Am., America; Belg., Belgium; Eng., England; Eur., Europe: Fr., France; Ger., Germany; Jap., Japan; Ont., Ontario; Rus., Russia.]

NAME.	Class.	DESCRIPTION.					
		Size.	Form.	Color.	Quality.	Adhesion.	Season.
*De Soto	Am	6	r o	y r	g		m
Wolf		6	r o	r	f		m
*Rockford		6	r o	y r	g		m
Hawkeye		8	r	r	f		w l
*Wyant		6	r o	y r	f		m
Abundance	Jap.	6	r o	br r	f		e m
Green Gage		4	r	g y r	b	f	m
*Lombard		6	r ov d	r p	g	c	l
Purple Egg		6	r f	v y	f		m
*Moore's Arctic		6	r o	b	m		c
*Rollingstone		4	r o	r	f		m
Gaylord		8	r o	r y	f		l
Burbank	Jap	6	r	p y	f		m l
Stoddard		8	r	r	f		m e
Aitkin		8	o	r	f		m e
Wickson	Jap	8	r w	br	g		m
Red June		6	ov	r	f		v e
German Prune		8	o	p	f		m
Chas. Downing		6	r o	r	f		w e
Weaver		6	o c	r	f		m
Yellow Egg		8	o	y	p		e
Black Hawk		8	r o	r	g		m l
Quaker		8	r o	r y	g		e
Ocheda		6	r o	r y	g		m l
Hammer							
Surprise							
Springer							
Spaulding							
Forest Garden							
Brittlewood							

Note.—The plums that may be grown in Wisconsin are of four classes: American of improved natives, Japan and European. The first class (Am.) is hardy in all parts of Wisconsin, while the Japan and European are recommended for the lake region.

CHERRIES. (Cerasus)

[Key.—Size, scale 1 to 10; 1, very small; 10, very large. Form: c, compressed; h, heart shaped; o, oblate; r, round. Color: a, amber; b, black; p, purple; r, red; y, yellow. Quality: scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Eur., Europe; Fr., France; Ger., Germany; Ont., Ontario; Rus., Russia.]

Name.	Class.	Description.					
		Size.	Form.	Color.	Quality.	Season.	Origin.
Dyehouse	Morello.	5-6	r o	r	5-6	v e	Ky.
*Late Kentish	Morello.	5-6	r	r	4-5	l m	Am.
May Duke	Morello.	6-7	r h	r	8-9	e	Fr.
*Montmorency	Morello.	7-8	r	r	7-8	e m	Fr.
*Morello	Morello.	6-7	r h	r b	5-6	l	Eng.
Ostheim	Morello.	6-7	e	r b	6-7	m	Rus.
*Richmond	Morello.	5-6	r	r	5-6	e	Eur.
Windsor	Sweet..	8	h	y r	7-8	l	Ont.
Wood	Sweet..	7-8	r h	y r	7-8	e m	Ohio.
Wragg							

STRAWBERRIES. (Fragaria.)

[KEY.—Sex: s, staminate; p, pistillate. Size, scale 1 to 10; 1, very small; 10, very large. Form: c. conical; co, compressed; l, long; o, oblate; ob, oblong; ov, ovate; r, round; i, irregular. Color: c, crimson; d, dark; l, light; r, red; s, scarlet. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; m, market. Abbreviations of names of places of origin: Am., America; Austr., Australia; Can., Canada; Ont, Ontario]

NAME.	DESCRIPTION.						
	Size.	Form.	Color.	Quality.	Sex.	Season.	Texture.
*Aroma	....	....	....	....	....	....	....
*B. Wood	6	r o b	p r	g	s	e	f
Bubach	8	ob r c	b c	v g	p	m	f
Brandywine	8	o c	c	g	s	l	m
Brunette	6	r	d r	g	s	m	m
Clyde	8	ob r c	s	g	s	m	m
*Crescent	7	c	d s	g	p	m	f
*Enhance	7	r c	p r	g	s	m l	m
Glen Mary	7	co	b r	g	s	m	m
*Gandy	7	r c	p r	g	s	l	f
*Haverland	7	ob	b c	v g	p	m	s
Jessie	8	ob c	b c	v g	s	m	s
Lovett	7	r c	p r	g	s	m	m
McKinley	7	of c	d r	g	s	m	f
Marshall	8	co	d r	g	s	m l	f
Michel E	6	r c	p r	v g	s	e	f
Margaret	7	c	d r	g	s	m l	f
Parker Earle	7	c	p r	g	s	l	f
Splendid	6	r ob	p r	f	s	m	f
Wolverton	6	c	d r	f	s	m	f
*Warfield	6	c	d r	v g	p	m	f
Wm. Belt	8	c o	b r	g	s	m	m
Van Deman	6	r c	d c	g	s	m	f
Lester Lovette	....	....	....	....	....	....	....
Sample	....	....	....	....	....	....	....
Klondyke	9	l	l r	g	s	l	m
Dunlap	8	c	d r	v g	s	m	f

GRAPES. (Vitus.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: o, oval; r, round. Color: a, amber; b, black; g, green; r, red; w, white; y, yellow. Quality, scale 1 to 10, 1, very poor; 10. best. Season: e, early; m, medium; l, late; v, very Use: d, dessert; m, market; w, wine. Abbreviations of names of places of origin: Am., America; Ont.; Ontario]

NAME.	DESCRIPTION.					
	Size	Form.	Color.	Quality.	Season.	Origin.
*Agawam	8-9	r o	p b	6-7	m	Mass.
*Brighton	7-8	r	r	7-8	e	N. Y.
*Concord	7-8	r	b	5-6	m	Mass.
*Delaware	2-3	r	r	10	m	N. J.
*Diamond	6-7	r	g w	7-8	m	N. Y.
Janesville	5-6	r	b	3-4	e	Wis.
*Lindley	5-6	r o	r	5-6	m	Mass.
Mossasoit	7 8	r	r	5-6	m	Mass.
*Moore's Early	8-9	r	b	6-7	e	Mass.
*Niagara	8-9	r	w	7-8	m l	N. Y.
Salem	9-10	r	b	7-8	m	Mass.
*Vergennes	7-8	o	r	8-9	m	Vt.
*Wilder	9-10	r	b	7-8	m	Mass.
Woodruff	8-9	r	r	6-7	e m	Mich.
*Worder	7-8	r	b	7-8	e m	N. Y.
Merrimac	8-9	r	b	7	m	Mass.
Campbell's Early						
McPike						

RASPBERRIES. (Rubus.)

[Key.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; o, obtuse; r, roundish. Color: b, black; c. crimson; p, purple; r, red; s, scarlet; y, yellow. Quality, scale 1 to 10: 1 very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin; Eng., England; Eur., Europe; Fr., France; Ont., Ontario.]

Name.	Description.					
	Size.	Form.	Color.	Quality.	Season.	Origin.
*Columbian	9-10	r	p	6-7	e	N. Y.
*Conrath	8-9	o v	b	8-9	e	Mich.
Cumberland	9-10	o v	b	9-10	e	Pa.
*Cuthbert	7-8	r c	r	6-7	m	N. Y.
Eureka	6-7	r	b	5-6	e m	Ohio.
*Gregg	7-8	r o	b	5-6	m	Ind.
Golden Queen	7-8	r c	y	6-7	m	N. J.
*Kansas	6-7	r	b	6-7	m	Kans.
*Loudon	6-7	r c	r	7	m	Wis.
*Marlboro	7-8	r	r	4-5	m	N. Y.
Miller	7-8	r	r	7-8	e	Del.
*Nemeha	7-8	r o	b	5-6	e	Nebr.
*Ohio	5-6	r	b	4-5	e	Ohio.
*Older	5-6	r	b	5 6	e m	Iowa.
*Palmer	6-7	r	b	5-6	e	Ohio.
*Shaffer	8 9	r	p	6-7	m	N. Y.
Souhegan	3-4	r	b	5-6	m	N. H.
Turner	4 5	r c	r	7-8	m	Ill.

BLACKBERRIES AND DEWBERRIES. (Rubus.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; o, oblong; ov, oval; r, round. Color: b, black. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America.]

NAME	DESCRIPTION.					
	Size.	Form.	Color.	Quality.	Season.	Origin.
*Briton	5-6	o ov	b	5	m	Wis.
Early Harvest	4-5	ro	b	7-8	e	Ill.
Eldorado	7-9	o	b	7-8	e	Ohio.
Minnewaska	9	o v	b	6	m	N. Y.
*Snyder	6-7	o	b	7-8	m l	Ind.
*Stone	5	ro	b	7-8	l	Wis.
Triumph	5-6	o ov	b	6	l	Am.
*Badger	6-7	o ov	b	6	m	Wis.

DEWBERRIES.

Lucretia	9-10	o ov	b	8	e	W. Va.
Bartell	8-9	o ov	b	7	m	

CURRANTS. (Ribes.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: r, round. Color: b, black; r, red; w, white. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Eur., Europe; Fr., France; Ont., Ontario.

NAME.	DESCRIPTION.					
	Size.	Form.	Color.	Quality.	Season.	Origin.
*Prince Albert	7-8	r	r	7-8	e	Eur.
Cherry	9-10	r	r	5-6	m	Eur.
Fay	9-10	r	r	5-6	m	N. Y.
*Holland	5-6	r	r	4-5	e m	Am.
Market	5-6	r	r	4-5	m	Eng.
North Star	5-6	r	r	5-6	l	Minn.
Red Cross	9-10	r	r	9-10	m	N. Y.
*Red Dutch	6-7	r	r	8-9	m	Eur.
Ruby Castle	6-7	r	r	6-8	m	
*Victoria	6-7	r	r	5-6	m	Eng.
*White Dutch	6-7	r	w	9-10	m	Eur.
*White Grape	7-8	r	w	8-9	m	Eur.
*Wilder	8-9	r	r	[illegible]-8	m	N. Y.
*Lee's Prolific	8-9	r	b	6-7	m	Am.
*Naples	6-7	r	b	6-7	m	Eur.

C

GOOSEBERRIES. (Ribes.)

[KEY.—Size 1 to 10: 1. very small; 10, very large. Form: o, oval; r, round. Color: g, green; r, red; w, white; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium. Use: d, desert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Ont., Ontario.]

NAME.	DESCRIPTION					
	Size.	Form	Color	Quality.	Season.	Origin.
Chatauqua	8-9	r o	g w	9-10	m	N. Y.
Champion	[illegible]-8	r o	g y	5	e	Am.
*Downing	5-6	r	g	5-6	m	N. Y.
Industry	9-10	r o	r	6-7	e	Eng.
*Houghton	2-3	r o	g r	7-8	m	Mass.
Pearl	5-6	r	g	9-10	m	Ont.
*Red Jacket	5-6	r o	r	8	e	Ont.
Smith	5-6	o	y g	9	e	Vt.
*Triumph	8-9	r o	g w	7-8	e	Pa.
*Columbus	8-9	r o	g y	9-10	m	Am.
*Queen	8-9	r o	y g	7-8	m	Wis.
Lancaster	....	......	.. ..	....	....	....

TREES AND SHRUBS RECOMMENDED.

EVERGREENS.

For screens and windbreaks—Norway Spruce, Balsam Fir, White Pine.

For hedges and screens for shearing—Norway Spruce, American Arbor Vitae, Red Cedar.

For lawns and cemeteries—Norway Spruce for backgrounds. For groups—American Arbor Vitae, Hovey's Golden Arbor Vitae, Pyramidalis Arbor Vitae,. Siberian Arbor Vitae, Juniper Excelso, with Protection.

For small lawn decoration—Juniper Sucica, Arbor Vitae, Hovey's Golden Arbor Vitae, Arbor Vitae Pyramidalis.

DECIDUOUS TREES.

For cemeteries—Cut-leaved Birch, Wisconsin Weeping Willow, Weeping Poplar.

For lawns—All named above, and, in addition, Laurel-leaved Willow, Mountain Ash Oak-leaved, Mountain Ash American, Mountain Ash European, Maple Cut-leaved, Maple Norway, Kentucky Coffee Tree, Catalpa, Speciosa, Elm. American, Elm Scotch, Elm Weeping, European White Birch.

SHRUBS.

For cemeteries—Hydrangea Paniculata, Cornus Philadelphus, Tree Lilac, Spirea Japonica, Spirea Van Houtii, Wahoo (American Strawberry Tree), Exchorda Grandiflora.

For lawns—All named above, and, in addition, Purple Barberry, Purple Fringe, Upright Honeysuckle, Wigelia Rosea.

For screens and hedges—Upright Honeysuckle, Barberry Red Fruited.

ROSES.

Twelve best varieties hybrid perpetual—Paul Neyron, Mrs. J. H. Laing, Gen. Jacqueminot, Dinsmore, Marshall P. Wilder, Coquette des Blanches, Earl of Dufferin, Jules de Margottin, Vick's Caprice, Magna Charta, Prince Camille de Rohan, General Washington.

Moss roses, four best varieties—Perpetual White, Salet, Paul Fontine, Henry Martin.

Climbers, five best varieties—Prairie Queen, Russel's Cottage, Seven Sisters, Gem of the Prairies, Victor Verdier.

Hybrid china—Madam Plantier, Madam Hardy.

Brier roses—Persian, Harrison.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society.

Annual Winter Meeting.

The Annual Winter Meeting of the Wisconsin State Horticultural Society was held at Madison, February 3d, 4th and 5th, 1903.

The morning session, February 3rd, was called to order at 9 A. M. by President T. E. Loope.

Rev. Mr. Updyke, of Madison, led in prayer.

The President announced the following committee on Fruit Awards: Messrs. George T. Tippin and L. G. Kellogg.

Reception Committee: Messrs. F. C. Edwards, S. H. Marshall and A. J. Payton.

A short recess was then taken, to enable the members to become acquainted with each other.

At the close of the recess, Mr. L. G. Kellogg moved that Mr. Tippin of Missouri be made honorary member of the Society. Carried.

Mr. John Harris, of Minnesota, on motion of Mr. Philips, and Mr. Thompson of Illinois, on motion of Mr. Edwards, were both also made honorary members.

NEW VARIETIES OF APPLES.

Mr. F. H. Chappel: I was called upon by our friend, the Secretary, to talk to you about the new seedlings that I have introduced, or have looked up and experimented with. I have only noted down the names of the kinds, so I have to refer to each kind.

Walworth Seedling originated in Walworth county, so we have called it Walworth. Probably it would be a good thing to show you an apple or two of them; here are some of the smaller ones. A young bearer and the apples hang on the ends of the limbs like a weeping willow and bears very heavily and hangs to the tree well; seems hardy, with no blight, very fine quality, and we think it is going to be an apple for our climate that will be thought much of.

Pittsfield Stripe. It originated in New York state, Otsego county, town of Pittsfield, on my father's own farm in the corner of a rail fence, close to the road side, leaned its branches over the road, so that people would drive up from the road and pick. I sent down there for scions and grew them. The old tree must be over 80 years old and doing well at the last report. It is very hardy, free from blight, a straight, healthy, smooth-barked tree. A young tree that I set out two years ago last fall, a little over two inches through, had 786 big apples on it last season, and all the heavy winds we had last fall never blew off half a dozen up to the time of late picking.

Jersey Pippin. This is an apple that was on the place that I am now on, that I have lived on over 34 years, and when I came on to it it had been cut to pieces badly because it was a spreading tree and they wanted to plow under the tree and thought they would cut off some of the limbs; they cut off some which were 5 or 6 inches through, which hastened the tree becoming worthless and I dug it up a year ago last fall. It has borne very heavy crops of fine apples. It is something like the Longfield in shape and quality, and I have taken 25 barrels off that tree, besides windfalls in the fall of 1880. It has been a very hardy tree and healthy. I have some of the young trees, but only a few fruiting as yet. The apple is a little greasy when there is any wet on it, and shows very fine, smooth skin.

Murphy Greening. Originated in the town of Dunn, by a man named Murphy. It is a green apple, changing to yellow when it is matured. This is late fall and early winter.

Murphy's Blush. That is a tree that is over 50 years old and has borne heavy crops of apples of fine quality, rather acid, smooth and handsome, medium size, with a blush on one side and pale green on the other.

Forest Greening. That is a round, handsome, green apple and is extra quality. It was taken from the woods on an adjoining farm where I live and it is one of the finest in quality, perhaps, that you will find in any apple known, and seems very hardy.

Dick Seedling. Seedling of the Snow apple, or Fameuse, as you may call it. It will keep till late in the summer, looks like the Snow apple very much, smooth, handsome and mild flavor, full as mild as the Snow apple, but a little on the yellowish on the inside.

Louise. That is a Canada seedling; originated near Abbotsford, Canada. A large apple, sometimes has been known to grow four nches through, it is claimed, by the man who sent me scions from Canada. It took the first prize in London, England, and the merit prize, also; and then in Ottawa, Canada, it took the $10 first prize as being the best apple known there. Very handsome, upright tree; one of the handsomest trees I ever grew, in shape.

Dominion Winter. Very hardy tree; I think will stand any hardship of cold winters or drouth that any crab tree will stand. I never saw the tree that will excel it for that purpose, and it bears good crops and holds well to the tree without blowing off. All the winds we had last fall scarcely blew off an apple, unless there happened to be a wormy one on the tree. They are a fine eating apple, medium size, yellow when it is fully matured, and will stand all the wind that a burr-oak will stand and not split.

Ray Apple. Mr. Ray lives within three miles of this place; he claims that it is a fine green apple, flattened something like the Rhode Island Greening, not as large. It was on a farm over 50 years ago at Arena, White county, and he brought me some of the scions and I planted it. The appes are very mild and good and he values it very highly and claims he wants 100 trees when he can get them grown.

I have many other varieties that I am experimenting with, but no sufficiently tested to give to the public.

DISCUSSION.

Mr. Philips: Perhaps I ought to say a word in regard to this last apple. I saw that apple in Oconomowoc first, and then I went to his house and he showed me the report of the Canada Ontario Society in 1886 and they said it was an early bearer and one of the best apples they had on exhibition at their winter meeting. Now that was saying quite a good deal, and I got scions right away and went to growing it. It is everything that he says in the nursery; I have had it bearing in the nursery, where it is very hardy and it does not blight. But there was one peculiar thing about it. I received the Canada reports right along until last year, and from 1886 up until last year it was never mentioned in the Canada report. About five years ago I wrote the secretary and president of the society that had recommended it in 1886, and asked them why it did not appear in the reports, and they said it was an apple that they did not know anything about; it was spoken of before they had anything to do with the Society. I sent them samples and they said it was too poor a quality of apple to grow in Canada.

Mr. Edwards: I would like to ask Mr. Chappel if he has grown the Forest Winter; or if anybody here knows anything about it.

Mr. Chappel: I do not know it.

Mr. Edwards: I was at Oconomowoc this winter, and one of the fruit growers here was growing these "Forest Winters;" he classes them with the Seek-no-Further. Where he got them I do not know, but they are, in my judgment, a better eating apple than the Seek-no-Further. He was desirous of getting some trees to plant, but there is not anybody growing them. They appear something like the Ben Davis, and I was wondering whether anybody was growing them, or knew anything about them. It is not a sweet apple, but it is a very pleasant eating apple; if I were to take my choice between this and the Seek-no-further, I would certainly take the Forest Winter; that is the name that he has attached to it.

Mr. Buehler: I thought that we had the same apple, but the descriptions do not compare.

Mr. Edwards: What is the description of your apple?

Mr. Buehler: It is quite large and pretty hard; we think it is rather poor quality to eat.

The President: What is the color?

Mr. Edwards: The color is something like the Pewaukee.

APPLES SAFE TO PLANT IN WISCONSIN.

A. Clark Tuttle.

By Wisconsin, we mean the good orchard locations in the south half of the state except the tier of counties bordering on Lake Michigan.

A variety of apple safe to plant in this section, described above, must certainly be hardy. It must not be subject to blight. It must have passed through, without serious injury, one or more of those winters which Providence has placed here occasionally to test our fruits and flowers. It is not safe to plant an apple whose record shows that it was killed or badly injured during the winter of '84 and '85. We have had no winter since that would test varieties. We do not consider the "Northwestern Greening" safe, because the original tree killed in an ordinary winter and a sprout from this tree killed in the winter of '84 and '85. (It has been tested and failed to pass.) Other seedlings that have not passed through a test winter unscathed, are unsafe.

The Wealthy is a tested seedling, and although not as hardy as some of the Russians, it may be considered safe for our best locations. The original tree of the Newell's Winter, has been flourishing since the spring of 1844. It has withstood all the test winters of the past sixty-two years. The soil of its location is quite sandy and it does the best on light soils. Wolf River has been tested and ranks with the Wealthy for hardiness. There may be other seedlings that have stood the test. The Duchess, for three decades has been at the head of the whole list of apples, for hardiness. Of the two hundred Russian apples, that have withstood the test for hardiness in this state, at least 12 have proved productive and not subject to blight. The following are the names arranged as to season: Early Champagne, Lowland Raspberry, Tetofski, Antonovka, Duchess, Red

Wine, Hibernal, Prolific Sweet, Longfield, Anisim, Boiken and Repka Malenka.

The earliest known apple, Early Champagne, heads this list. The second on the list is Lowland Raspberry. It is bound to be the most popular very early apple in the United States. Is particularly suited to the fancy basket trade, as it is large, handsome and of exceptionally fine quality.

Red Wine is the handsome apple. More beautifully colored than any peach, a vivid carmine, over spread with the most delicate white bloom. As it shows through the deep green foliage we doubt if there is anything in fruit that surpasses it in exquisite beauty. It is rather tart for eating out of hand but makes a fine pie.

Hibernal is very hardy. That is its greatest point. It grows in locations where even crab apples fail.

Prolific Sweet is recommended by Dr. Hoskins of Vermont, as "the most valuable commercial sweet apple." It is very hardy and a superb grower in both orchard and nursery. Never saw any blight on it whatever.

Longfield has twig blighted once or twice but did not shorten its crop and the second year after, no sign of the blight could be seen. It bears enormously every year. Often overbears which causes the fruit to be small. That is the case with all varieties that overbear and the crop should be thinned.

The Anisim is another heavy, annual bearer. It is one of the very few that promise to take a place near the top as a commercial apple, as it is covered with a dark, rich red color and will not show bruises. The oldest tree of this kind we have, was left to stand in the nursery now, the scion from which it grew, came from Russia in 1868. Since 1874 it has borne every year but one and that was the year in which a late frost killed all fruit blossoms. A beaten road runs along near the tree on the east side and a stiff blue grass sod has fed it for more than twenty-five years. For a term of years it will produce twice as much as the Fameuse and commands as high a price, side by side. They open bright and free from scab. A neighbor of ours shipped several barrels of Anisim to St. Paul, the autumn of 1900, which netted him over and above freight and commission $3.00 per barrel. At the same time and place, his Wealthy netted $1.59 per barrel. The same neighbor shipped to Duluth this last fall, and the Anisim sold for $4.00 per garrel, as high as quotations for extra Jonathans at the same time, in Chicago markets. Another neighbor received $1.00 per barrel more for his Anisims, at Duluth, than for his Wealthy.

The Boiken is the least known in Wisconsin of any of the twelve. We had not fruited it till this year. It does well in Northern Vermont and in the vicinity of Quebec. Prof. Macourn of the Ottawa Experiment Station, Canada, speaks highly of it. It is hardy and productive, and is said to keep till June.

Repka Malenka is the variety that if picked carefully into barrels, in the orchard, left unheaded till moisture passes off, then headed up and placed in a cool cellar till June will open in perfect order, with color that will dazzle the eye. The tree is a healthy, fine grower in nursery and orchard. Is apt to overbear, out that is a good fault and easily corrected. It beats the shy bearer 75 per cent. No blight. The fruit is medium in size, striped with bright red, quality good, much better than Ben Davis. Holds its brisk tart flavor till June. No trouble to keep this apple till the Lowland Raspberry is ready to use, without any cold storage.

This list of twelve is succeeding throughout Wisconsin, notwithstanding the great amount of talk against it gy our nurserymen and becoming popular wherever the trees are old enough to bear. It is the only lot of apples that has passed through all the hard winters since 1870 without injury and ready with a crop the next year.

The following is a list of the safest of the American apples which are doing passably well, where white oaks will flourish. Plumb's Cider, Talman Sweet, Utter's Red, McIntosh Red, Haas, St. Lawrence, Bailey Sweet, Seek-no-further, Willow Twig and Blue Pearmain.

To sum this up, let me ask you to take these ideas as coming from one who has spent forty-five years in Wisconsin studying, writing and experimenting to try and ascertain what varieties of apples will grow in our State. He has been styled "a Russian Crank," and is proud to merit the title. But will say in all earnestness that he is after the hardy, enduring varieties, be they Russian, American or seedling apples and is ready to talk and work for any and all those apples which have withstood the test.

DISCUSSION.

Mr. Philips: In regard to your statement about the birth and death of the Northwestern Greening, you made a statement about the first three sprouts coming up and dying, and it's not being a safe tree to plant,—how do you get your information?

Mr. Tuttle: Mr. Daniels was considered the introducer of the Greening.

Mr. Philips: Yes, he was; he bought the scions.

Mr. Tuttle: Well, in the summer of 1884, I think it was, this Society had a Summer meeting at Green Bay, Mr. Daniels was present, and as I understand it from several that were there, he was asked how it was about the original tree of the Northwestern Greening; he said he understood that it died; that it was winter-killed, but he said it had thrown up another sprout and he thought it would bear the next year. Well, then we heard from parties that that sprout killed in 1884 and 1885, which was the winter following this summer meeting. That is a point that I would like to know, whether it is so or not.

Mr. Tuttle, Sr.: I got my opinion of the hardiness of that apple from Mr. Daniels. He came before the meeting at Green Bay in 1884 and wanted to talk about his apple. He had not talked long before some one said, "How long since the tree died?" He said, "I do not know, but I understand it is dead. There is a hardy sprout that came up again that will bear next year." Now that tree has been recommended as perfectly hardy by some, but the only tree that I had in the nursery that killed in the top in the winter of '98 was the Northwestern Greening. I have seen young trees that have killed root and branch in the nurseries. I do not believe when there comes a winter like 1884 that there will be enough left in Wisconsin to count.

Mr. Philips: When this apple was first put out by Mr. Daniels it was an attractive apple, and I took quite an interest in it, and I think it was in 1882 that I heard for the first time that the old tree was dead. I went up there, and Mr. Hatch, son of the man who planted the tree, sent a man out with me and he showed me the old tree, and it was not dead. It did not look as well as I expected, and Mr. Hatch explained that Mr. Daniels had cut the tree to death for scions; people were hard up for winter apples and were trying it at different places. After a while it was reported again that the old tree was gone, and I thought if it was entirely gone that people ought to know it, and I went up there and Mr. Barnes and I drove out to see it. The property had changed hands, a Norwegian had bought it and he did not know anything about the tree, but we found it, and still the tree was not dead. That was about 1894. We found the old tree had grown to about ten inches in diameter and somebody had cut it off squarely with an axe to within two inches above the surface of the ground, and around that stump where it was cut off it was sprouted, and sprouts had come out thick all the way around, and the larger ones had crowded the smaller ones out, and those larger sprouts stood up about as high as this ceiling, just as thick as they could stand. They had not borne any yet. I cut out some scions and brought them home and gave Prof. Goff some of them. Now we can say what we please about that apple, but I have been to five different horticultural meetings this winter, in Iowa and Minnesota, and all over the northwest, as far north as Lake Minnetonka they are growing those apples, and everybody told me that it is a fine apple for cold storage, keeps way along into the summer. It has got as far down as Missouri and they have a large number of trees planted there. With me it is as hardy as the Wealthy, but it is a bad tree to crutch. I found ten trees last summer near home, that were ten years old, and they had to be propped up, but the apples were just as nice as those on the tables.

Mr. Barnes: If there is anything on God's earth that I am proud of, it is the Northwestern Greening apple tree, and I want to say here, I am willing to stake my reputation on the Northwestern Greening, provided you will plant it on prairie clay soil. Never plant it on deep, black prairie soil if you expect success. It will grow in sandy soil and produce as good results as any apple tree I know of. It was my privilege to judge the apples at various fairs in the northern part of this state for the last two or three years, and I found that the farther north you go, when planted on good clay lands, the finer the Northwestern Greening trees are.

Mr. Tippin: I am very much interested in this discussion of the Northwestern Greening. I can report to you that my first interest was brought about through my relation with Mr. J. C. Plumb, of Milton, who is now dead. Perhaps not many of you know it, but we grew his trees for him, a majority of them, in

Missouri a number of years before he died, and among those varieties that he sent down to be grown was the Northwestern Greening, and upon the strength of what he said, believing it to be the coming apple for your state, and the magnificence of the tree as a nursery tree, some of them were planted in our country. One orchard with which some of you gentlemen have some acquaintance has 200 trees in it; another, 10 miles north of our city, Springfield, has 100 trees out of those trees that were grown from grafts sent from your own state; they come into bearing reasonably early, when about six years old, and have borne well. We have had the apples of those 100 trees in storage two seasons in Springfield. The crop of 1890 was stored by one of our neighbors, and the crop of 1891 was stored by myself. The tree is very young, and we packed 45 barrels of the crop of '91 and put them in storage the 16th day of September. That would be a little early up here, I presume, and was a little bit early in our country, but we were packing his Grimes Golden, and they were pretty near ready, and he insisted that we pack these at the same time, so we did. Five months after that we took those apples out of storage, all except one barrel that was overlooked, that we took out a month later, making six months for that, and I want to say in defense of this apple, that as far as it has shown itself down there, that it was remarkable; it showed no deterioration whatever, and no discoloration. I had questioned the advisability of growing the trees, because we had felt that it was a northern apple, but I was so impressed with its success up to this time that we sent to Iowa and bought 200 trees and planted them for ourselves last spring. As to its hardiness, I cannot say further than that we had the most severe trial in our orchards in southern Missouri in 1898, when the thermometer went down to 30 degrees below zero without any warning, and these trees stood the test as well as any others that I know of.

Mr. G. J. Kellogg: I was at the Minnesota meeting this winter, and Wyman Elliott, perhaps the best fruit man they have in the state, taking all things into consideration, reported for the best three hardy apples for the eastern district: Duchess, Wealthy and Northwestern Greening. I have never seen anything that indicated tenderness of the variety except the first trees that I have planted. The first half dozen trees that I received from Daniels himself came to me blackhearted; the trouble may have been from pruning. I have never seen any winterkilling in my nursery or any orchards in the southern part of the state, and from the fact that Wyman Elliot puts it in the list of the best three for Minnesota. I have more confidence in it than I ever had.

Mr. Gibbs: The death of one apple tree counts as nothing. We as agricuturists are just as much under obligation to establish scientific methods of testing, as are biologists in other departments of life, animal and vegetable. A long and large list of experiments are necessary to establish anything. We know not what might have been the cause of the death of that tree, if it had died as Mr. Tuttle thought it had. But after 20 years' trial of that variety, when we find that its posterity is springing up all over the Northwest everywhere, giving us favorable results, when we know that it has been fruited all over Wisconsin, and I had almost said all over Minnesota and the other northwestern states for at least 15 years, constantly increasing in the number of plates on exhibition at all of our local fairs everywhere, showing for itself what it is in quality and appearance when we can raise it, that is entitled to count for something.

The Northwestern Greening was first introduced to this Society at its Green Bay meeting in December, 1883; that gives it a 20-year period of trial up to this date. I do not know where in your own records you can turn to the history of that apple, but I have with me the Minnesota Horticultural report of 1884, and on page 199 of that report you will find the history of that apple, if you wish to refer to it.

Mr. Irving Smith: Most of you know that we live up amongst the ice-bergs and pine stumps at Green Bay. We had very nice Northwestern Greenings this year.

Mr. Barnes: I want to add just one word of testimony—25 to 40 miles north of Marinette and Menominee, up in the wilderness, I have seen beautiful Northwestern Greening apple trees growing and bearing nice fruit.

Mr. Gibbs: We are getting now from the cold storage people the opinion that the Wealthy was only good in cold storage for 90 days, but we have got the proof here now that this will endure cold storage six months.

The President: I do not agree with the last statement made by Mr. Gibbs, that the Wealthy will only keep for ninety days in cold storage. I have three barrels here that were taken out of cold storage yesterday that have been in since the middle of September, and we will see how well they have kept.

CRAB SEEDLINGS FOR APPLE ROOT GRAFTS.

Mr. A. D. Barnes.

From my experience of the past six years of propagating from twenty-five to forty thousand nursery trees each year—of our leading varieties—carefully root grafted in the usual way—of short roots on long scions, by using roots grown from carefully selected crab apple seeds, I am convinced that this will and does actually make the best nursery and hardiest orchard tree to me known, that is practical and to be grown at a minimum price. I am convinced however that a few sorts may be worthy the extra work and additional expense of top grafting onto Virginia or Martha stocks. Yet the majority of our leading varieties, if grown in Wisconsin and from Wisconsin grown scions will, if properly pruned to right height and form grafted as aforesaid on crab roots, grow trees sufficiently hardy and vigorous to withstand our changeable climate and cold seasons. Practical experience has demonstrated to me that crab apple roots are more hardy than promiscuously grown apple seedling roots are, and that the cross of the apple blood upon a crab apple root is conducive to and does stimulate an early maturing of the apple wood or tree especially during its infancy or the first two years of age. And still further I am satisfied and have demonstrated it to a certainty—that most varieties of apple trees *put on crab apple roots will and do put out more roots* from the lower end of the scion than does those grown on roots of the apple seedlings—owing I presume to the fact that the crab roots are harder and contain less sap or nourishment to the tree than does a softer root, hence the effort of the scion is encouraged to attempt assistance of self support. I am further satisfied that—crab roots are stronger, will stand more drouth and abuse, will penetrate into harder soils and convert into uses minerals and elements not to be dissolved or utilized by a softer or weaker root, and as the roots and fibers which have grown out from the scion are closer to the surface have the power and opportunity of taking up and converting into proper uses the essential elements in the arid and cultivated surface soils, thereby utilizing all the available matter to be reached, surely will guaranty us a hardy, vigorous orchard tree. Previous to the winter of 1896, it had been my practice to use apple seedlings in making root grafts. During the winter of 1895 and 1896 we had no snow or very little at least and a long, cold, dry winter. In the spring of 1896 it was my misfortune to find thousands and thousands of my trees with that portion of the seedling roots absolutely dead, while in most cases such as Wealthy, Haas, Wolf River, N. W. Greening, Walbridge, and others that had sent out roots from their scions, said roots were alive and vigorous enough to maintain and support unmoved and carefully pruned nursery trees, yet I found it wisest to dig out and destroy in a single week over eighty thousand otherwise fine trees. This, to me, severe and discouraging loss put me to studying and investigating how best to overcome this risk of root killing and it shall be my purpose and effort next fall to procure all the wild crab apple seeds that I can get at reasonable expense and I shall grow seedlings from these for apple root grafting. Perhaps this article would be more appropriate to come before a convention of nursery men than to an assemblage of this kind, yet I have tried to make this paper so plain that the average planter may be benefited thereby and that he may take new inspiration and make new resolutions to seek and encourage the practical resources for success.

DISCUSSION.

Mr. Geo. J. Kellogg: I want to ask Mr. Barnes if he has grown the wild crab-apple seedlings to use with any success?

Mr. Barnes: I never have; but we know the wild crab-apple is a native all over this state, and it grows in very unfavorable places and in setting it, I believe it is absolute hardy.

Mr. Kellogg: How will our common apple take on the root?

Mr. Barnes: I have never tried to root graft. I have grafted different varieties of crabs and different varieties of standard apples on old wild crabapple trees, that is, top-worked them, with wonderful success, and I can remember that as much as 40 years ago my father in Dodge county grew some wonderfully nice apples on crabs top grafted on ordinary varieties. The trees that I have grafted make nice union in top work.

Mr. Kellogg: I fear that there will be failure in utilizing the wild crab as a stock; that it will not take as well as other seedlings, and from my knowledge of what our friends Stickney and Von Bomberg did with the little crab seedling stock that they used 40 years ago, it dwarfed the tree and brought the varieties into bearing somewhat earlier.

Mr. Moyle: I do not anticipate that this will be the greatest fault we can find with crab-apple seedlings. Those of us who have experimented growing pears on dwarfs find that the dwarf is a very slow-growing stock. In the first place, Mr. Barnes will find when he plants his wild crab-apple seedlings, that it will be a few years before they are large enough to graft, probably two or three years. Then he will find, if he wants to cut roots from the scion, he is all right, because the apple scions will naturally, being grafted onto this crab root, slow growing root, they will throw out small fiber roots of their own and after a time become established on their own roots. That is true, and if we can only get these stocks large enough to graft, I think these wild crabs are ahead of the French crabs. That is one of the biggest humbugs we have, the French crabs; I am ashamed that I have to graft them.

Mr. Tippin: I have never used crab in propagating trees; I can not say anything only touching the theory of propagation. I do not believe that using the crab for root graft, where you graft the ordinary way, that you will contribute any hardiness to the tree, because it is only a question of time when it is on its own roots anyway. Now it occurs to me that if you could grow the crab seedling rapid enough to bud it, it would be the only way that you could add anything to the hardiness of the tree that you propagate, and from my experience I believe your best results will come from propagating with hardy trees, using a long scion and a very short piece of seedling to start with. The experiment station of Nebraska, after three years' experience in the propagation of trees, gave out their bulletin that a short piece of root, about half an inch long, and a long scion, about 10 inches, made the best tree, both above the ground and below. This corroborates my experience of twenty years in propagating, and that would be the course I would pursue if I were in Wisconsin. I would propagate from trees that I knew to be hardy in such a way as to throw them entirely upon their own roots as early as possible, as a rule. I think I would succeed better than to use a piece of crab, because I could not hope to make a tender tree hardy after it had gone upon its own roots after being grafted.

Mr. Philips: No man in the Northwest has given this matter as much study as Mr. Hanson, and I have his bulletin here on this subject of root grafting. I have not used the small crab apple root myself.

Mr. Tippin: I want to state that what I have said now is my private opinion, but if Mr. Hanson's views are different, I want you to take his ideas, because he has certainly made a very thorough investigation along this line.

Mr. Barnes: Mr. Hanson, Mr. Tippin and myself are laboring in three distinct and different situations. Mr. Hanson is in the cold, dry northwest, Mr. Tippin is in the center or south, and I am in a moist section in the north central portion of this state. That is my system of grafting, and my conditions do not correspond with yours. I am willing to give way to our friend here from Missouri in regard to his system or systems for his own use. I am just as glad to give way to Mr. Hanson of Brookings, who is laboring under a different climate and different soil, but I have found that system to be the best for me in my section.

Mr. Marshall: It might be well to state that while in Iowa Mr. Peyton said that he had had seven years' experience with top-grapting seedlings,—in my report I have given the exact figures, but I think that it may have been three years with certain varieties, and the only variety that was living was the Wealthy, and the only one that did well.

Mr. Edwards: I think we ought to know what crab-apple we are talking about. There is a large class of crab-apples. You speak of seedlings, you speak of wild crabs. Now I understand Prof. Hanson is using one crab apple, and you are talking about another. Now what crab-apple root is this.

Mr. Barnes: I have always propagated, for the last number of years, from seedlings from a house in Nebraska. They claim to me, and I think they are honest as can be, that those roots are grown from Vermont seedling crab. Now that would be a promiscuous crab seedling. They are harder, and I can tell a bundle by putting my knife into them, I can tell the difference.

Mr. Philips: Mr. Hanson was sent by the department to the old country, and he has got what he thinks is the original seedling crab; it is a small apple, about as large as a thorn apple; it is the original *pyrus baccata*.

Mr. Kellogg: I understand the *pyrus baccata* is a lttle cherry crab that we grew 40 years ago, and the little yellow crab that were called seedlings ran on until we got the Hyslop.

I do not understand that this Vermont appleseed that Mr. Barnes speaks of is a crab-apple; I understand it is their refuse from the cider mills, of the Vermont apples.

The President: Mr. Kellogg, are you correct in regard to that pyrus baccata? I asked that question in Minnesota and did not get a satisfactory answer. They say it is smaller yet than that.

Mr. Moyle: I think Mr. Kellogg is right. You take Bailey's Encyclopedia, and you will find out that he therein describes the pyrus baccata, and it corresponds identically with this little common cherry crab that we have. I have compared these two in our orchard; he is right.

In regard to these crabs growing down in Vermont state, I think as Mr. Kellogg says, it is nothing but the seeds washed out from the cider mills. I should prefer at the present time these seedlings to the French crab, because that is not at all what we ought to use, and we know it, but we can buy these seeds cheaply in France, so a great many orchards are using them.

Mr. Barnes: This is not the French crab seed that I am using but the roots are grown from seeds procured in Vermont and sold to me for the last number of years by, I believe, honest people, as seeds from different varieties of the larger sorts of crab apples grown in Vermont.

Mr. Kellogg: We have been using the Vermont seedling for years, and we think it is better than the French crab.

TUESDAY AFTERNOON SESSION.

On motion of Mr. Edwards, Mr. Jonathan Periam, of Chicago, was made honorary life member of the Society, in consideration of his presenting the Society with a complete set of Illinois Reports.

COMMERCIAL ORCHARDING IN WISCONSIN.

J. G. Buehler, Ithaca.

President, Members of Wisconsin State Horticultural Society, Ladies and Gentlemen:—I am pleased to meet with you here today, my first opportunity, and to present to you a paper on Commercial Orcharding in Wisconsin. I hope it will be interesting to you all through. I will touch only some of the important points and leave details for discussion. I am not as old in this profession as some of you here today. It is four years only since I have given my time and attention to this calling which came to me through Prof. Goff, while I attended the short course. My first lesson in horticulture was close observation, this lesson alone, if I had not learned anything else in short course instruction, I would feel richly repaid for my expense there, so my theories are based upon my own observation. From a commercial standpoint, Wisconsin lacks recognition as a commercial fruit growing state as compared with some of our neighboring states and why? I believe we have in this state as good climate, condition, location and soils for orcharding as can be found anywhere. Wisconsin apples have won prizes at the Pan-American and Omaha expositions and World's Fair at Chicago for quality, flavor and beauty that are second to no other state in the Union, but we lack quantity or large commercial orchards. I do not think that we can compete with Missouri, southern Illinois, or the Ozark regions in extent or with some varieties, this need not be so, prospect for intensive fruit culture was never brighter, and early apples are in greater demand each year. Inquiring recently of a large and reliable fruit firm in Chicago, that handled my crop for two seasons, as to varieties they would recommend for Wisconsin and gave best satisfaction, replied:

"We have no hesitation in recommending the McMahon White and Wealthies, the finest produced and are in great demand. Alexander while not so good quality are fine sellers on account of their size and color, but if they blight all over the state as bad as they do in my section I would not recommend planting them. Oldenburg are as profitable as any for commercal purpose, will reach highest perfection where cold and heat extremes predominate, and Snows, while subject to scab, give them plenty of room, and they are no worse than others. These four, McMahan White, Wealthies, Oldenburg and Snows, are standard, persistent, prolific bearers, and will net the grower more money than the other odd kinds raised. They are also ironclads, safe to plant anywhere in this state where apples can be grown."

Thousands of farmers in Wisconsin on high and hilly land would be more profitable with commercial orchards thus adding to the resources of the state. What chance have we to compete with the southern or western apple grower for quality, and that most desirable of all, an early apple? Last season buyers came to me from St. Louis to buy early apples. If I had hundreds of acres I could have sold them all. It seems to me that early apples do better north and winter apples do better south, where they have longer season, for instance, Ben Davis grows to highest merchantable perfection in Missouri. I deem it absurd for Wisconsin to plant a single Ben Davis for commercial purpose. Long keeping varieties without immediate cold storage are not always as profitable as early apples when you take in consideration capital, shrinkage and labor involved in storing and repacking. Then why not exchange such commodity with the southern grower? He comes north to buy our early apples; let us go south and buy his winter apples and thus keep up a greater demand for apples. Plant but few varieties for the commercial orchard of high quality; then feed them, spray them and cultivate. I am positively convinced that it is absolutely necessary to spray thorough to keep an orchard thrifty and to grow merchantable fruit. Cultivation supplemented with cover crop is the safest method to follow. Early or late varieties grown in sod will not keep so well, for they lack vitality and are short lived. Some agitation is abroad as to mulch method following nature's plan. I condemn it for two reasons, first, that it is dangerous on account of fire; second, roots are induced to grow too near the surface. Disaster will follow unless this mulch is kept up continually. Under only one condition I would recommend it, and that's to smother out quack grass. Now I wish to touch the most important point of all, and that's the disposal of a crop. We have paid attention to all the details and are now looking forward for a crop to compensate our efforts. Therefore we must not only raise the crop but we must study market and crop conditions east and west, north and south, all over this broad land, that we may act in some capacity of business principles. When there is a general good crop all over we can not expect so much, but when there is a failure or partial failure in the harvest in the apple producing section of the country, you are not misled by local condition. There will be a demand for our crop at a fair price. We must also study the art of packing. It is a science to pack fruit properly, yet can be done by the average man if he is careful to handle it from the time he puts his hand on it to pick it from the tree until he delivers it, and keeps culls out. I hope that Wisconsin will be noted for honest people as well as for fine products. It is now customary in the newer apple growing section that buyers do their own packing. They then know what their packages contain, while in the old apple growing section in the state of New York farmers do their own packing and put their stamp or trade mark on the package, haul them to the station where buyers bid on them and farmers receive the benefit from competition besides their fruit is advertised individually. I believe in advertising and wish such conditions would exist here in our own state instead of commission men getting all the cream there is in it, which is often the case. We must also watch our legislature, make our wants known to our representatives to use their influence for the farmer's rights. No class of people are more deserving than the tillers of the soil for transportation and education, and I heartily approve Governor La Follette's message.

At the suggestion of Mr. Gibbs, discussion of papers on orcharding was postponed until all should have been read.

COMMERCIAL ORCHARDING.

Geo. T. Tippin.

Mr. President, Ladies and Gentlemen:—To write a paper on the subject assigned me would have been a difficult undertaking for me for my own state, where we are in a small measure acquainted with conditions and surroundings, but, to prepare an intelligent paper on commercial orcharding to be read before the State Horticultural Society of Wisconsin, where we have no acquaintance has been a greater task than we contemplated when we accepted the invitation of your Secretary to do so. While our subject would include the discussion of growing and handling of commercial orchards of various kind of fruits, we have confined ourselves to the apple. In presenting this paper we are keenly sensible to the fact that while a great deal of valuable information has been obtained from addresses of similar character, also a large amount of harm has been done. What might be termed a broadcast or blanket information based upon individual experience in a certain locality is often more harmful than beneficial in its effect, for in the majority of instances, where adopted and followed out by the inexperienced fruit grower, because of entirely different conditions as to climate, soil, variety, etc., from those upon which the information were based, failure and disappointment follow in marked degrees.

While commercal orcharding is reaching large proportions in this country, the center of the apple production is moving west of the Alleghanies to the great Mississippi valley.

Missouri, the state we have the honor to represent being in the lead with five millions more trees planted than any other state, we have felt that this phase of the subject would not be of so much importance at this time as a discussion of how and what to plant, to cultivate and care for, and last, but not least, how best to handle the products of our commercial orchards. The object of planting the home or family orchards is to provide fruit, health and comfort for the family, while commercial orchards are planted with the view of profitable investment and making money, hence to know how to plant, grow, and bring our crops to maturity will not avail us much if our labor is sacrificed by improper handling and marketing our crops. In this connection we deem it not out of place to state that we believe that the National Apple Grower's Congress recently organized at St. Louis, composed of apple growers, was made necessary in the progress and development of this great industry and will prove to be a very valuable institution to all commercial orchard growers, especially so, as to packing and handling our fruit. In this connection some one may ask, is there danger of commercial apple orcharding being overdone? We do not think so. But as our growing increases, our grading and packing must be better to insure success. Pack only number one stock;

turning everything else to the evaporator or other sources. Some one may say that too much fruit was evaporated this year, as the price is very low, and if more had been evaporated price would have been still lower. We do not believe this for it is our opinion that the low price for green apples this winter is not due to quantity but quality. We believe that if all the apples in the country were number one the market would be 50 cents to one dollar per barrel more than it is. We also believe that the low price of green fruit makes the low price of dried fruit. Consequently if all poor stock had been evaporated, and as evaporated stock can be carried without much risk, also go into consumption more readily when green fruit is high, we would have realized much better returns than we will under present conditions.

Mr. President, you will please pardon me for having gone into detail to some extent on this point. We realize that your people may not be so much interested in this part of the discussion as those in the larger apple producing belts, yet the influence of your deliberations here, will no doubt spread to these sections of our country, and as we have previously stated it is just as important to properly handle our crops as it is to produce them if we expect to make it pay. In growing a commercial orchard, the soil is the most important factor. We believe this applies anywhere within the apple belt of the United States. Fertility and moisture are indispensable in successful apple growing. Deep clay soil free from stone or gravel without hard pan below, are best in our country. Select soil that will remain as near an even temperature as possible, as to wet and dry heat and cold. You being acquainted with the nature of your soil in Wisconsin know better the characteristics indicating this condition than we do, and with this idea in view could make a better selection. While if you were to come to Missouri we would perhaps be more competent to select. The selection of varieties to plant should always be governed by those that do best where planting is to be made. The varieties that we would plant in Missouri as a rule would not be adapted to your state. Not being acquainted with those sorts that do best here we would not assume to recommend. However if the Duchess and Wealthy do correspondingly as well here as they do in north Missouri and Iowa, and the Northwestern Greening in southern Missouri, we believe they would be as profitable in a commercial way as Ben Davis in Missouri. Select your varieties adapted to your locality, testing new and untried sorts only in a limited way. And what would be better still let all your experiments as near as you can be made at your Horticultural Experiment Station. This is what they are for, and if all our State Horticultural Societies would discourage the planting of new and untried sorts unless they had been named by some Pomological Society of the states or nation or State Horticultural Society and recommended as worthy of trial, thousands of dollars would be saved to planters and many amateur would not plant the same variety under two or three different names or pay an exhorbitant price for trees propagated in a special way and on special stocks which never approached a reality nearer than the incubation of the ideas in the brains of some schemer who wanted something for nothing. We simply refer to this as a caution in making a bad start. Many good men have been shipwrecked in commercial orchard ventures because of bad beginning, so we trust our diversion will be pardonable. Good well grown trees should be selected, grown as near home as possible; be careful not to plant too deep; keep in mind that tree roots can be starved for sunlight and air; do your trimming in the early life of the orchard. Shaping your trees and trimming them; keeping in mind the fact that extreme changes in sap temperature are very injurious to trees causing them to die in spots, forming canker, etc. While our trees should not be allowed to grow too thick inside yet they should be formed so that the force of the sun's rays would be broken both in the summer and the winter. How best to cultivate depends largely on local conditions. As a general rule it is best to cultivate regular until the orchard comes to bearing. After this in some sections and upon some soils it is best to sow clover, cow peas, or grow some grass crop and mow it twice a year leaving the crop on the ground for mulch. Some have splendid success by continuous surface cultivation during the season. In applying the different modes of cultivation to our orchards we should study the nature of our soil, the location, and the effect of the cultivation and treatment about to be applied and not go ahead on the theory that because Smith, in Missouri, or Illinois, by treating his orchard a certain way made a success, the same treatment will succeed with us.

Commercial orchards are being planted on a large scale in many sections of the apple regions. Large contiguous blocks reaching one to three thousand acres which are being handled successfully, yet we believe that the same number of trees planted in ten to twenty acre plots would give better results. It has occurred to us in our observations covering a number of years that it would be better in planting forty or eighty acres as the case may be, to plant in blocks leaving avenues at least one hundred yards wide which could be cultivated in small fruits, or other crops. Our reasons for this is that in our experience in packing apples we have found that after the trees have become large the limbs almost if not reaching each other, we have often found that the fruit is not so perfect in the large orchards as it is in the smaller ones, and have come to the conclusion that it is easier to combat the ravages of insects and fungi in the smaller plots than it is in the very large plantations. As the extended and unfrequented forest is the habitation of wild animals and birds, so may the extensive orchards after becoming thickly grown become to a greater extent, the habitation and harbor for insects and fungi, than the smaller and more frequented blocks. As a large per cent. of the growth in the development of trees, fruits and plants is supplied by light and air we perhaps give too little consideration to this feature of fruit culture, and have suffered by doing so. We know of no vocation that requires the application of good judgment and common sense more, or one that pays any better on the capital invested, when applied, than commercial orcharding. The individual must take the best information he can get as to soil, varieties, care and culture, and intelligently apply it to his needs governed by local environments with which he is surrounded. Do this and he will succeed in growing an orchard. The time for gathering our commercial crops is also very important. Fruit should always be gathered when at the proper stage of ripening regardless of the time of season.

This season our apples matured three weeks to one month earlier than last year, and many growers sustained heavy loss by waiting until fruit was too ripe to pack. As we could not treat any more phases of our subject without trespassing upon your time we will close, and while the pathway of the horticulturist is not always strewn with flowers and his labors crowned with financial success, yet the field is well chosen where the pursuer, while being a producer and benefactor, is elevated, and broadened, surrounded with a pure atmosphere and life which makes better men and better women, and we hail with joy the tendency of the turning away from the cities to country life of the young men and women of our country.

Mr. Gibbs: I have a typewritten matter that I would like to introduce into this discussion, and I would like to pass it over to the Secretary, and with your permission, have it printed.

FAILURE OF APPLES IN PARTS OF THE STATE.

A. J. Philips.

The only places where I found an entire failure in our state in apples, plums and cherries was where a cold storm of rain followed by freezing came just at the time the trees were in full bloom, and lasted without bees, sunshine or wind for three days, thereby giving no opportunity for the pollen to be distributed. This was on cool elevated sites, for in valley or low locations the trees bloomed earlier and bore in most places fair crops. It goes to show how easy it is for a man to be disappointed. I have for twenty-five years said when I had blossoms I was sure of fruit, for on my ridge spring frosts never came; but this year the cold, protracted rain storm came and destroyed my crops. As to the second phase of my subject, I find old apples in our state like old men are passing away and are being supplanted by new ones, and we hope they will be better. I find in 1865 nearly half a century ago, that our Society recommended for extra hardy apples to plant as follows: Red Astrachan, Williams Favorite, Duchess of Oldenburg, St. Lawrence, Fall Wine Sap, Fameuse, Tallman Sweet, Perry Russett, Willow Twig, Pomme Gris and Red Romanite; and a list was recommanded for favorable localities consisting of Keesnick Codlin, Sweet June, Fall Stripe, Strawberry, Yellow Bell Flower, Utters, Sweet Pear, Fall Queen, Northern Spy, Winter Wine Sap, Golden Russett, Rawles Janet, Westfield, Seek-no-Farther, Blue Pearmain, Vandervere and Jonathan.

Now I find that of the above twenty-seven varieties only six are now starred as recommended for Wisconsin, to-wit: Golden

Russett, Oldenburg, Tallman Sweet, Utter, Willow Twig and Fameuse, while the others are displaced by such new varieties as Hibernal, Longfield, McMahan, Lubsk Queen, Milwaukee, Newell, N. W. Greening, Okabena, Peter, Pewaukee, Plum Cider, Raspberry, Repka, Scott's Winter, Switzer, Tetofski, Walbridge, Wealthy, Windsor, Wolf River, Wis. Russett, Yellow Transparent, Avista, Arabka, Anisim, Antonovka, Eureka, Charlamoff, Fall Orange and Fall Spitzenburg; twelve of them being Russians and eighteen of them being new seedlings, a majority of them being of Wisconsin and Minnesota origin—and the end is not yet. Minnesota is right up to the front with an offer of $1,000 for a seedling as hardy and productive as Duchess, good in quality as Wealthy, and that will keep as long as Malinda, and several promising competitors are already entered and being tested on their state grounds. It may be a long time before it is paid, but already it has caused a boom of interesting growers in the production of seedlings. Seventy-five dollars in pro rata prizes at their last meeting brought out about thirty different specimens which made a fine show. One which scored one hundred points under the judgment of such men as Wyman Elliott and Prof. S. B. Green attracted the attention of all visitors. I have some of them on exhibition here. I do not run to see every seedling I hear of, but when a man with the reputation for truth that Uncle Yahnke has, told me on the train that he had a seedling as handsome and productive as Wealthy, and would outsell it in the local market and would keep two months longer, it excited my curiosity and told him the story of the minister and the pup, though I made up my mind to see the tree as well as the fruit. So I spent one day and night with Mr. Yahnke on my way home and on thorough investigation made up my mind that for him on his own ground he has a grand apple and I advised him to set all the trees (about fifty) he has the coming spring, as at the rate his seven trees bore last season (fifteen bushels to a tree) in a few years it would pay him more than the rest of his farm. And I hope it will do well in other localities. To show how little we know at times, I will make another statement. Some thirty years ago I bought a piece of land for a pasture. On it were a few seedling trees bearing. The former owner said they were seedlings of the Hyslop crab. For a few years I showed the fruit with my other seedlings at state and county fairs, but they were small and hard and as soon as I had others that looked better I discarded them. The tree continued to bear heavy on alternate years and some every year, but being over half a mile from the house the horses, cattle and stray boys marketed the fruit until the fall of 1900. We were short of winter apples and my wife suggested that as that tree was full and the apples kept well that I pick them. So I sent a boy with team and ladder to pick them October 20th. He soon came back with ten bushels of green apples. I said you picked them quick. He replied I did not pick them, I shook them off. Not a quart showed signs of decay up to February 1st; when we began to use them, and we used them for pies and sauce up to May 2nd, and found scarcely a specked one. April 1st I sent nearly a peck of them to Prof. Goff with orders to test for pies and sauce. Soon a letter came from that very careful man saying, Why don't you propagate that apple? It is the finest in quality of any new apple you ever sent me. I answered him, Because it is too small. He replied its keeping quality and its excellence for cooking overcome its size, and top working will increase its size. I cut some scions that spring and found it grew nicely on Virginia and Hibernal. Last fall, 1902, I went to pick them myself but as the horses had eaten all the fruit on the lower limbs and the rest were high, I took the plan I found fault with the boy for doing. I, too, shook them off and picked up nearly two barrels. We are using them now and I have given some of them away in six places in Minnesota and two in Iowa to have pies made, March 15th, and report to me as to quality, and I have a few to give away at this meeting. I am ashamed to say that this tree has never been pruned, mulched or cultivated at all, and as I shook them off I have named it the Shook Crab, but Mr. C. G. Patten who has already saved the seeds of it for planting says it deserves a better name and suggests Philips Winter. I will decide what to do with it when the reports come in as to its quality, as I am satisfied with its hardiness and productiveness of fruit for four consecutive years. It is now full of fruit buds for next year. It is very good in quality as testified to by Professors Goff and Green. I am watching this with much interest. I could write for several days on the fine seedlings I have seen the past year, notably the Lyman seedlings from Wealthy at Excelsior, but these three are all I will speak of now as my veteran friend Phoenix is to follow me on this line.

Now for a few horticultural reminiscences that are constantly crowding on my mind as the years roll on. When I stop to reflect and consider. I have made up my mind while I have been surrounded with many disadvantages. I, too, have enjoyed many advantages and privileges during my years spent in horticulture, and I am free to say I ought to know more than I do and be better off than I am. When I consider that I spent nearly two years looking up new fruits for the government and spent nearly six months in Washington and had access to the correspondence on new fruits that was going on there, I say I ought to know more. But I am thankful for what I do know and for the privileges I have had. When I look back over the record and remember the first Treasurer of our Society, F. C. Curtis, and the last Treasurer, L. G. Kellogg; also our first Secretary, G. J. Kellogg, and the last Secretary, J. L. Herbst,—and will say I never became acquainted with a horticulturist in Iowa, Wisconsin or Minnesota without pumping some horticultural information out of him, I think when you read over the list that you will agree with me that I ought to know more than I do. Read the list carefully, and if any man can beat it just trot him out: J. C. Plumb, Geo. P. Peffer, Peter Gideon, A. G. Tuttle, J. S. Stickney, J. M. Smith, C. H. Greenman, E. Wilcox, J. S. Harris, E. H. S. Dart, Frank Yahnke, M. A. Thayer, Prof. H. E. Van Deman, S. I. Freeborn, Edson Gaylord, W. J. Moyle, O. M. Lord, T. E. Cashman, J. C. Ferris, E. Howlet, A. R. Whitney, A. W. Sias, P. A. Jewell, M. S. Kellogg, Dr. T. E. Loope, F. S. Lawrence, E. W. Daniels, Wm. Springer, Prof. E. S. Goff, B. F. Adams, A. D. Barnes, F. H. Chappell, N. W. Palmer, B. S. Hoxie, O. C. Cook, S. D. Richardson, Minn., Martin Penning, Minn., and Wm. Toole of pansy fame. This list includes forty prominent men and is a record I am proud of; besides I know I have forgotten some. To think you have known the originator and propagator of such fruits as the Wealthy, the Pewaukee, the Windsor, the N. W. Greening, the Wolf River, the McMahan and Yahnke apples, and the Surprise, Rolling Stone and Mankato plums is truly gratifying. But to think that about one-half of the men I have mentioned have left us and crossed the dark river has a tendency to cause a feeling of sadness; but it is pleasant to know that many of them left in their work monuments to their memories that will last after marble shafts have been forgotten. My travels the past year included a trip (my wife accompanying me) to Menomonie, Wis., where we visited the great training schools which will be a monument to Mr. Stout's memory for a long time to come. Next we spent two days at the Jewell nurseries, where half a day was spent on Lake Pepin and the balance of the time in the nurseries, the great rose and peony gardens and the large orchards there were very pleasant. Then the session of the summer meeting at St. Anthony Park was pleasant and full of interest. A trip then to Lake Minnetonka, the home of the Wealthy and the Lyman's Prolific crab was next. The old Lyman tree produced $40.00 worth of fruit this year. Then we spent two days with our old Wisconsin pioneer, Mr. Dart. Though quite feeble he was taking great pleasure in his experimental work. I have visited him again this winter; he is confined to his house since his last paralytic stroke which occurred in September. I have attended besides the Minnesota Winter Meeting, the Annual Meeting of the Southern Minnesota Society at Albert Lea, the home of our former Wisconsin man Clarence Wedge; have also attended the North-East Iowa Meeting at Nora Springs in company with our Wisconsin Delegate W. J. Moyle. The attendance at both places was very good, the discussions were interesting and unusual interest was manifested. The latter place is the home of two noted horticulturalists, to-wit: Edson Gaylord and E. R. Heisz. In looking up the records I find Mr. Heisz, with whom I stopped three days this winter, read a paper on orcharding at our annual meeting in 1870, and I could not help but notice the great interest he took this winter though his eyesight is poor and he can not hear a word of the papers and discussions. He attended every one of the sessions at Nora Springs. He seemed to enjoy being with the apples where the best of his life has been spent. There is truly something attractive, elevating, fascinating and ennobling about horticulture.

DISCUSSION.

Mr. Kellogg: I want to ask Mr. Buehler if he had anything more than those four varieties that the Chicago men recommended for the markets for commercial purposes?

Mr. Buehler: No, sir, I had not. The varieties that were rejected, were: Pewaukee and all kinds of Russetts, Longfields and Hibernal, and in fact, all except those that I have named, Duchess, McMahan White, Wealthies and Alexanders.

Mr. Kellogg: Had you marketed any Northwestern Greenings?

Mr. Buehler: Just one tree.

Mr. Barnes: I want to ask the gentleman his system of marketing hs apples; did you peddle them out; did you sell to dealers, or did you consign them to commission men?

Mr. Buehler: I consigned to a commission man. The entire crop in our neighborhood was consigned to Porter Bros., Chicago; they did their own packing, furnished their packages; we had nothing to do but to pick them and deliver them to the station. We received $1.25 a barrel, and we netted $1.00 clear on every barrel we sold to them.

A Member: With that method of marketing apples, do you think you get better results than if you had sold to dealers direct?

Mr. Buehler: Well, I think this way, that when we sell the dealers direct and have our name or trade mark on the packages, we advertise our fruit and receive the benefit of competition.

Mr. Barnes: It seems to me that a dollar a barrel is a pretty small price for Wisconsin apples.

Mr. Buehler: That was for all varieties; we had some varieties that were not so desirable. They took them all.

Mr. Menn: Did you make any effort to try the northern markets, Duluth and Minneapolis?

Mr. Buehler: I shipped some to Milwaukee after I was through with Porter Brothers.

Prof. Cranefield: There is one point that is of importance. He stated that the keeping qualities of apples grown in the sod are not as good as of those grown on cultivated soil. I would like to ask if he has made any extended observations in that line?

Mr. Buehler: I had occasion to ship my crop to Madison two years ago, and was very much disappointed. The most of them were grown in sod, and Prof. Goff advised me that I should incline to cultivation more, as apples grown in the sod lacked the nitrogen and vitality for keeping qualities.

Mr. Kellogg: Have you any winter apples that are a success?

Mr. Buehler: I have the Northwestern Greening I consider a success.

The President: I would like to ask somebody if the Northwestern Greening comes within gunshot of the Wealthy?

Mr. Gibbs: Yes, it keeps longer in cold storage.

The President: I mean as a commercial apple. There are plenty here who can tell about the Wealthy and the way it bears, and the length of time from setting out the tree until the getting of fruit, and the comparison between the two, I mean commercially.

Mr. Barnes: I presume it has been my pleasure to grow more Northwestern Greening apples than any man in this state, and I will state that my Wealthies generally bring me $2 a barrel and my Northwestern Greenings bring me $3 a barrel right from the tree. I always make it a practice to sell right from the tree.

The President: In the five or six years that you have been raising the two apples, which has given you the most dollars?

Mr. Barnes: In five or six years the Northwestern Greening would give no dollars to speak of, because they do not begin to bear for six or seven years.

The President: I mean from the time they commence bearing.

Mr. Barnes: Well, it would be six of one and half a dozen of the other. You get so many more Wealthies on the same space of ground that it would be about the same; I think the cash receipts would be about the same from the Wealthy as from the Northwestern Greening.

Mr. Philips: What proportion are market apples of the Northwestern Greening?

Mr. Barnes: Ninety-nine per cent. with us.

Mr. Philips: I mean since you have raised them.

Mr. Barnes: I would not like to speak of some years. But that does not cast any reflection on the Northwestern Greening. I made the mistake of planting them right in the center of my orchard, quite a large orchard, out of the wind, you might say, and I made the mistake of planting them too thick, and one or two years I had very bad looking apples; they were not scabby but covered with a mildew, or mould on the apple, that really was some detriment, but this year they were perfect, so far as the mould or mildew was concerned.

Mr. Menn: Mr. Buehler spoke about planting early varieties for the commercial orchard; would this be a safe rule to follow?

Mr. Buehler: I consider it so; raising summer apples.

Mr. Edwards: Do you make just as much money out of them? Do you think you could compete with the southern people in selling them?

Mr. Buehler: I have not seen any winter apples in this State that I think can compete with our early apples in production. Now I would like to give you a few facts and figures, just a word about the production of early apples in my locality. This summer I had 55 trees of good Oldenburgs that bore 163 barrels of apples, merchantable apples, and a neighbor of mine had the same results from McMahan White. I think that taking into consideration the production that we get out of early apples, from anything that I have seen yet, we can make up for the price that way later and I have been advised by commercial men that Wisconsin should plant early apples, because winter apples require a longer season, and they get it further south.

Mr. Gibbs: We found out in South Dakota, where I lived twelve years, that we could put the Yellow Transparent into our market in good condition ahead of any apples that we could ship from the south, and command the market until the Duchess got ready.

Mr. Moyle: It depends a great deal on where the land is located. You cannot ship these apples very far successfully, that is, most of the varieties. Now where I am located, we have early apples; Milwaukee is our market, and we get our dollar a barrel most of the time, except when there comes a big glut. As a rule they pay much better than those other varieties. I think he is right there; he is level-headed.

The President: I would like to get to the point, if it is proper right here, as between the Northwestern Greening and the Wealthy for commercial purposes in Wisconsin. Not that I would exclude one or the other, but I would like to ask Mr. Philips, if he were going to plant 1,000 trees and had to choose between Northwestern Greening and Wealthy, what would you plant, in what proportion?

Mr. Philips: In my location I would plant 600 Wealthy and 400 Northwestern Greenings.

Mr. Buehler: I would plant Wealthies.

Mr. Gibbs: Have you ever grown the Northwestern Greening?

Mr. Buehler: I have, in my orchard.

Mr. Gibbs: How many years have you fruited it?

Mr. Buehler: It is an old experimental orchard; there is but one tree there; in my neighborhood it is considered a fine apple; I think in the future it will be a popular apple.

The President: Mr. Edwards.

Mr. Edwards: It seems, at first impression, I would put out the Greening, because we get the best price and they certainly bear heavily in our neighborhood.

Mr. Coe: I should plant more Northwestern Greening where I am located.

Mr. L. G. Kellogg: I should plant 500 Northwestern Greening and 500 Wealthy.

Mr. Payton: Is it not a fact that red apples are better than white or green; is it not a fact that they will bring more in the market?

The President: I think that is pretty well understood.

Mr. Philips: You have been free to ask questions; I want you to tell us what you think.

The President: I answered the question at Minnesota. I said, the first 100 I would put out Wealthy; and I thought the second 100 I would put out Wealthy, and then I thought I would put out about 800 more Wealthy.

Mr. Abbott: What few apples I raise for the local market are Wealthies; I have plenty of call for Wealthies, but never had a call for Northwestern Greening.

Mr. Payton: If a red apple brings more in the market than a green; if the Wealthy brings more than the Greening in the market, and it is a heavier bearer, why is it not a better apple to raise?

The President: Mr. Payton, I think I would answer that something like this, that they do not fit the same place. The Northwestern keeps very late and the Wealthy will not, unless you cold storage the apple. Now there is a great deal of difference, and I think Mr. Barnes and the others here are all right enough for their localities, they want so much of the Northwestern Greening, so much of the Wealthy, but I am right at the home of the old Northwestern, within ten miles of where it was propagated, and we ought to know something about it. The Wealthy commences bearing two or three years before the Northwestern does. You get some years an excellent crop of the Northwestern Greening, sometimes they rot and break open.

Mr. Barnes: I want to ask our friend from Missouri if there is any difference between the Gano and the Ben Davis; are they two distinct varieties?

Mr. Tippin: The Gano and the Ben Davis are not the same apple, the Black Ben Davis so-called by some are the same apple, based upon the best information we have been able to obtain so far, and there is no question in my mind that that is true and will be settled perhaps satisfactorily in the near future.

I think perhaps the question of summer apples has not been discussed quite as much as it is entitled to, in view of the fact that a great many of you are no doubt in touch with the situation as it really is. Now in my section of the country where we are growing strawberries, I will say this year about one thousand carloads, we endeavored to plant our varieties so as to drop in our notch in the market as it advanced through the season, commencing from Arkansas and going north to Missouri, and I believe I can speak intelligently when I say that in the apple belt of Missouri and Arkansas that for the past twenty years in planting commercial orchards, it has been almost entirely to the exclusion of summer varieties, and while I am one of the heaviest packers in that part of the section, I will say to you that it is almost impossible, with the exception of a few stations, to buy a carload of summer apples, and, as you all know, we are strong on winter apples in that country, and can put our winter apples in the market almost anywhere in competition, and it occurs to me that if you would give your attention more to growing good summer varieties, that is your opportunity. I believe that if you will grow good summer varieties and pack them correctly in bushel boxes where you want to ship them away, you will always find a splendid market. I know those few points down there that have summer apples get good prices for them, because they are very scarce, and it will be a good many years before we will get so we will have good summer apples, because the old family orchards are all dying out and are most of them dead and gone, while our new orchards coming in are largely winter apples, and some few fall, and I think this is a point brought out in the young man's paper that is worthy of considerable investigation and thought by you people of Wisconsin.

Mr. Kellogg: You spoke of the Wealthy succeeding in your state; to what degree?

Mr. Tippin: The Wealthy north of the Missouri river is doing splendidly. I will say for your edification that we shipped about 600 barrels of as fine apples as I ever saw in my life in this season from a point north of the Missouri.

Mr. Kellogg: I have been told that south of Des Moines in Iowa they do not consider the Wealthy worth planting.

Mr. Tippin: Well, they are doing very well and they are becoming more popular every year in the north of Missouri, north of the Grand river, about north to St. Joe all through that section.

(Mr. Edwards in Chair.)

Dr. Loope: The point brought out by Mr. Buehler in regard to summer varieties I think is quite an important point in Wisconsin, and our friend, Mr. Tippin, has just emphasized that by saying that they grow entirely winter apples and they cannot or do not grow summer apples. Now we can grow those early varieties successfully; take the Duchess and Wealthy and Longfield and McMahan, and they flourish. Of course you have got to select your locations, as they do not grow in some locations, but we can raise them, beautiful and large, and I think that point is a good one. It shows perhaps where our orchard interest lie. Then of course you can fall back on the Northwestern Greening, so far as we know now, for the next best apple for a long keeper.

The Chairman: Is it "do not" or "can not," from Missouri?

Mr. Tippin: I do not mean to say we could not grow them, we simply got out of the habit of planting them.

Mr. Harris: A majority of my crop last season was Duchess and Wealthy, and I sold them largely in the city of La Crosse and in the home market, and in the fall while at the fair I met a great many men both in Minneapolis and St. Paul, looking for a future market, and every one with whom I talked, some twenty in number, said that the demand for summer apples was unlimited; that for the next two years they could dispose of all the Duchess and Wealthy apples that we could raise; that they had a supply of winter apples, that they did not want to take winter apples, they wanted to contract for Wealthy and Duchess.

The Chairman: I would like to ask Mr. Tippin if we do not grow a prettier apple in the Northwest than they do in the southwest, in his opinion?

Mr. Tippin: In the summer varieties you do. Northern Missouri grows a cleaner, clearer summer apple than we can grow in the southern part of the state. In Kansas, further south, they are inclined to scab and be defective, that is, the earlier sorts, and the farther north you go, the clearer they are of any defects, scab, etc.

The Chairman: What do you attribute the nice color of our northwestern fruit to, soil, or climate, or what is it?

Mr. Tippin: Well, I think it is quick growth, one thing, a quick development and good warm sunshine when they mature, and your trees are not so large; I have thought that that had something to do with it.

The Chairman: There is a general impression that the eastern apples have a more smoky appearance than the northwestern apples; that is a fact, is it not?

Mr. Tippin: That is true. I have on the table there a specimen of York Imperial that if you were to ship it to the eastern market it would be hard to persuade many of the eastern people that it was a York Imperial. Theirs are smoky, and I will say for your apples, that they are very clear as compared with apples in other sections of the country.

SEEDLINGS TO GROW ON TEST.

Mr. A. P. Wilkins: I do not think Mr. Phoenix is here. I am now owning and running the nursery he operated. If there is any question you wish to ask in regard to his seedling, I will be glad to answer it. I will say that when I purchased that stock I found a large body of ground covered with seedlings, and the treatment I gave them was to put a pickax to them and rooted them all out and burned them up. Out of the whole lot there was not a tree that produced apples bigger than hickory nuts. I know that he had produced one apple, I think the No. 50, that became quite a good apple, but it was lost track of by himself, so that there is not anything there today that is worth naming, in fact, I dug them out and burned them up, carloads of them. The treatment that he gave seedlings there would not be such as would develop any apple. The last few years of his life he was in poor health, and I do not think he has given it attention; so far as I know he has not produced anything worthy of note.

The President: I have a little inquiry here. President Francis, of the Bee-keeper's Convention, has given me this for the Society to render him some answer, and I have no doubt you can answer the question to his entire satisfaction. The question is this, "What is the effect on the fruit if sprayed while in bloom," and also, "Is there any law to prohibit spraying of fruit while in bloom?" He said that he would like to get the information as far as possible from this Society, as it might make a difference in some legislation that they had in view. I see Prof. Sandsten is here, of the University, and I wish to introduce him to this Society, and ask him to reply to this question.

Prof. Sandsten: In regard to the question of spraying fruits or blossoms in the springtime, as affecting insects and affecting pollination,—two years ago a series of experiments were carried on at Cornell University to ascertain that point, and it was found that two or three applications of Bordeaux mixture and Paris green did not materially reduce the amount of fruit on the trees. When the spraying was conducted for a whole week, every day, it was found that it did reduce the number of fruits set. When four applications were made it was found to be equal to a good thinning, and it did benefit the trees because the fruit was superior in size and in color.

In regard to the influence of the insecticide and fungicide on the insect, very little danger was found to exist, because the insect, you know, inserts its beak and extracts the fluid; it does not eat it, but simply extracts it, and it was found that very few insects were affected. There was an agitation at that time for the introduction of a bill to prohibit spraying at a time when fruit trees were in blossoms to protect the bees, but, if I remember rightly, the bill was not pressed. The discussion has been called up time and time again on that subject, but I feel, and I think others will agree with me, that there is very little danger from any injury to the bee.

Mr. Periam: The state of Michigan has a law prohibiting spraying while in flower; the only state that I know of that has enacted a law of that kind. The law was enacted because it was supposed that the spraying of trees during inflorescence killed the bee. That part of the question has been answered by Prof. Sandsten.

A Member: I would like to ask Prof. Sandsten whether he thinks the spraying directly injures the pistil or stamen of the flower?

Prof. Sandsten: The principal injury caused by spraying is not injury to the pollen or anthers, because the anthers do not open at one time; it is the pistil that is affected first by the spraying.

REPORTS OF TRIAL ORCHARD.

A visit to the two trial orchards located at Wausau and Eagle River the first week in November found them in as good a condition as could be expected.

At Wausau the orchard did remarkably well in growth and to all appearances the trees looked healthy and strong with the exceptions of a very few. The ground has been kept clean the past season and was gone over several times with drag to keep the soil in a loose condition. The soil was worked over around each tree and where it had been thrown up by plow and cultivator was leveled off. In the commercial orchard several of the varieties fruited a little the past season, including Longfield, Wealthy, Duchess, McMahan and occasionally some fruit was found on some of the other sorts. The plums and cherries all blossomed out full but the snow and cold rain at this time seem to have destroyed them as very few fruited to any extent. The trees in general throughout the orchard appear to be in a strong healthy condition. In the experimental part of the orchard several varieties are inclined to show some signs of weakness. Such varieties as Bryan, Hoteling, Kaump, Red Cheek, are among these while aside of these the standard sorts seem to be in a thriving condition. Most of the top-worked trees are doing remarkably well but occasionally one is found that will have to be gone over in the spring and regrafted and trimmed up some. But very little signs of blight was found throughout the orchard. All cherries are in a strong, healthy condition and making a rapid growth.

At Eagle River I was somewhat surprised at the appearance of the trees. Here a goodly number of trees were found dead which a year ago seemed to be in the best of condition. Those trees that were set out first and made such wonderful growth the first season seemed to be the one most affected. Most of the trees set out last spring started and made a good growth. Out of 432 trees set out the two years at this orchard I found 64 trees either dead or too feeble to remain. Among these I found 5 E. Richmond, 1 Surprise Plum, 3 Tetofsky, 1 Sweet Russett, 16 Duchess, 4 Wealthy, 1 Longfield, 2 Transcendents, 2 Hyslop, 4 McMahan, 5 Fameuse, 5 McIntosh, 1 Tallman Sweet, 9 Seek-no-Further, 1 N. W. Greening, 2 Summer Early, 1 Willow Twig, and 1 Frieds Winter. This orchard had good care, hoed crops were planted between the rows and ground was kept clean. Last fall each tree was heavily mulched to guard against root killing.

The new trial orchard located at Medford seems to have done very well as can be seen from Mr. S. F. Harris's report, sent to me some time ago. Mr. Harris reports out of 120 trees planted only two are dead this fall which are Montmorency cherry. The following varieties were planted at this station: Wealthy, N. W. Greening, Wolf River, Willow Twig, Snow, Eureka, Newell, Tallman Sweet, Duchess, Y. Transparent, Whitney, the Wyant and Wolf plum, and Montmorency and E. Richmond cherry. Trees were planted 20 feet each way and mulched at the time of setting. Mr. Harris will lease from three to five acres of land, plant and care for the trees upon the same under the direction of the State Horticultural Society, without charge, provided the said Society furnish all trees without charge and pay the freight and express charges thereon. Mr. Harris has taken great interest in the orchard the past season and we feel as if we could not have placed this orchard in better hands.

J. L. Herbst,
L. G. Kellogg.

Mr. Chairman and Members of the Horticultural Society:—A short time ago I was requested by your secretary to come to this meeting and furnish what information I could for Taylor county. I wrote him that I would not be there but would send some one in my place, accordingly I have made arrangements with Mr. Gerard Landweer to deliver this paper as I am not able to make the trip at this time. I planted the trees you sent me, 120 in all, as near to directions given me by Mr. Kellogg as I could. I received them about the 8th of May, but it was very wet weather and we could not plant until about the 14th of May, they made a slow, steady, healthy growth excepting two cherry trees which died. The land was planted to corn and well cultivated. Trees set 20 feet each way and in July I went through with a hand hoe and scattering the mulching and lightened up the top surface, working in some around every tree. Trees were cut back at time of planting and the suckers kept from growing. They were planted about two inches deeper than grown in the nursery, as I knew the land would settle that much although it was well pressed down over the roots. I planted ten Wealthy, ten N. W. Greenings, ten Wolf R., ten Willow Twig, ten Snow, ten Eureka, ten Newell, ten Tallman Sweet, ten Duchess of Oldenburg, five Yellow Transparent, five Whitney apples; five Montmorency and five Early Richmond cherry; five Wyant, five De Soto plums.

I would recommend to the State Horticultural Society that they encourage subordinate societies throughout the state to take the place of the large force of so-called agents in the nursery employ. Farmers must study if they want to use their money for a good purpose. Our county has paid dearly for its lack of knowledgs of their own business by taking the word of strangers who take the money while the farmers take the loss for their share, when if they had been in a little closer contact with our state organization they would have saved their money and put it to good use. The nurseryman and the farmer should be neighbors to the fullest extent, not so widely separated by the host of middle men. Then, too, the farmer has a business to protect by his honor, but the latter has in many cases neither.

Respectfully submitted,

S. F. HARRIS.

THURSDAY EVENING.

(In charge of Department of Horticulture, University of Wis.)

VEGETABLE GROWING UNDER GLASS.

A. C. McLean.

The subject of forcing vegetables is so comprehensive in extent that I can only hope to touch on some points that might be of interest to you.

The first thing to consider is the style of house best adapted to profitable forcing. While the even span and lean-to are very good types of houses, the consensus of opinion of the best authorites on this subject is that a broad three-quarter span is the most economical and easiest to manipulate; that is , a house 40 to 60 ft. wide and of any desired length. A house of this style 300 to 400 ft. long will cost according to estimates of Prof. L. H. Bailey from $4,000 to $6,000. Although a cheaper house would be fairly satisfactory, it pays in this business as in all others to start with the best. There is a new house on the market now put out by a Jersey City firm which has a broken roof of short spans. This house I think will become very popular in time, although it has not been fully tested as yet.

The vegetables commonly grown under glass can be grouped into two general heads, those requiring a cool house, as lettuce, radishes and other crops which do best in the cool spring, and those which require a warm house, as tomatoes, cucumbers and those crops which need the hot sun in the summer to bring them to perfection. Of all cool house crops, lettuce is the most important in this country today. Immense quantities of it are forced in the east for the markets of New York and Boston and in the west around Chicago and Minneapolis. Head lettuce in New York market averages about 50 cents per dozen heads for the winter season. Grand Rapids forcing, a bunch head lettuce sells here in Madison wholesale from 35 to 40 cents and there is not enough to supply the demand. Lettuce is a plant that requires a night temperature of 50 to 45 Fahrenheit and a day temperature of 55 to 60 Fahrenheit, although in sunny days the temperature runs much higher. The soil best suited for lettuce forcing is generally given as one of a sandy nature, loose and friable with little clay and silt. Looseness is of great importance to enable the roots to freely penetrate the soil and keep it from water logging. In fertilizer experiments conducted at the Geneva, New York, Experiment Station in 1900 by S. A. Beach and H. Hasselbring the best results were obtained with a clay loam. The planting of lettuce on solid beds rather than on benches is in favor with the majority of the large growers. The reason advanced for this is that as the lettuce plant is essentially one of a cool nature the soil bed does not become as highly heated as on the bench. The general manner of growing a crop of lettuce is briefly as follows: The seed is sown in boxes broadcast, pricked out in similar boxes two inches apart, as soon as first leaves are formed, and then transplanted in the beds when two to four inches high, four inches apart for bunch varieties and six inches for head lettuce.

Radishes are successfully grown under the same conditions as lettuce except the soil should be of a little heavier nature. They are planted in rows about four inches apart and thinned out as soon as first leaves are formed to about one-half inch apart in the rows. Let me say here that size of seeds is of considerable importance in the radish crop. In some experiments conducted at the University greenhouses this fall there was a marked difference in the size and yield of radishes from the large seed over those from the small. Radishes can be used as space fillers in the greenhouse and made quite profitable. Asparagus, rhubarb, celry and cauliflower are also forced in cool houses, but none of them to much extent yet except rhubarb, which is forced very profitably in the dark considering the outlay necessary. It is very easily forced in a dark shed or cellar of a temperature of 55 to 65 Fahrenheit from two year old roots merely placed on the floor. It is selling in Madison now for 10 cents a pound wholesale and as it only takes a few stalks to make a pound you can easily figure the profit.

Of all the warm house crops grown in this country today the tomato is probably the most extensive. This is a very profitable crop, especially in late winter when the sun is bright and fuel less expensive. They sell in New York market from 15 to 30 cents a pound in winter months wholesale. The temperature required is 60 to 65 degrees Fahrenheit at night and about 10 degrees higher in the day. The soil for the tomato should not be excessively rich, so as to overdraw the plants, because the most profitable plants are those of a short stocky growth where the clusters are borne near the ground. A good garden loam composed of clay sand and a little well rotted manure is that mostly recommended. The single stem system is that recommended by the experiment stations at Geneva, Cornell, and that of New Jersey and also found the most satisfactory here at the station greenhouses. It gives a better yield of good fruit than a three stem. This system is briefly to train a plant to a string or stake with a single stem keeping all side branches off. The distance which gave the maximum yield at the New Jersey experiment station was two and one-half feet each way, but two feet was found the most satisfactory to handle. The Cornell Experiment station estimates the average yield to be two pounds to the plant or two square feet of surface. There is a great diversion of opinion as to the varieties recommended. Cornell recommends Lorilard, Chemin Market, Long Keeper, but the Lorilard as best, and strongly condemns the Dwarf Champion, while the New Hampshire experiment station highly recommends Dwarf Champion and like varieties. The most satisfactory at this station has been Lorilard. The method of growing here is briefly as follows. The seed is sown in boxes and pricked into thumb pots as soon as leaves form and from here again into four inch pots, always setting as deep as possible to obtain dwarf stocky plants. From four inch pots there are transferred to the bench or bed. The bench is considered by the best authorities most satisfactory for the tomato.

The cucumber is another extensively forced warm house crop. There are two classes of cucumbers grown in this coutnry under glass, namely, the large English forced type and the White Spine class of outdoor cucumbers, the former principally for a fancy retail trade and the latter for the general market. The common market price for cucumbers in late winter and early spring is $1 to $3 per dozen. They require a night temperature of from 60 to 65 degrees Fahrenheit and a day temperature from 70 to 75 degrees Fahrenheit. The soil suited for the tomato is well suited for the cucumber but may be somewhat richer as this plant is a very vigorous feeder. They are generally started in three inch pots and transferred immediately to the beds as soon as pots are filled with roots two and a half to three feet apart when they are trained on a trellis four to five feet high or on the rafters of the house. When they reach the top of the trellis they should be pinched to throw the strength of the plant into the forming fruits. Cucumbers as well as tomatoes should be hand polinated. This may be expensive but it pays as it does in all greenhouse work to do things in the best possible manner.

Beans are very easily forced but as they do not sell readily in winter I shall not discuss them.

Green corn has been successively grown by the New Hampshire experiment station and might be found a money making crop. I have only touched briefly on some of the points in vegetable forcing. Details must be learned by the grower himself as no fixed rules can be laid down.

In conclusion I would like to say that there seems to be a great future for the greenhouse forcing of vegetables in Wisconsin today. Take for instance Madison, it has only one small establishment in West Madison devoted to lettuce growing. The supply of this is naturally limited as there are only a few hundred of square feet of glass surface. The majority of the winter vegetables used are brought from Milwaukee and Chicago. Good prices prevail and the market is very poorly supplied. There would be a good opening here for a forcing house and as near as I can learn similar conditions prevail throughout the state in all the larger towns and cities.

DISCUSSION.

Mr. Kellogg: I would like to ask the young man if the pollination is not successfully done for the cucumber by bees?

Mr. McLean: There were experiments made along that line in green-houses, but it was found that bees in glass houses are not at all satisfactory; they want to get out, and they will fly out through the ventilator, or else fly against the glass all the time, and not work on the cucumbers at all.

Mr. Smith: I would like to ask if you put the long or short side to the sun in a $3/4$ span house?

Mr. McLean: In a $3/4$ span house it is customary to place it so as to face the south, so as to get the maxmum amount of sunlight. The general custom is to put the long side to the sun, except in even span houses, where it faces east and west.

Mr. Periam: I have never been able to fertilize cucumbers or tomatoes except by hand fertilization; the bees are not reliable at all, and especially in the vicinity of Chicago fertilization by bees is out of the question. The best success I ever had with lettuce was in a greenhouse with bottom heat, with 8 inches on the bed of manure; the trouble with greenhouse lettuce is, that it is very difficult to keep, because lettuce requires plenty of air. There are large houses in Chicago that are devoted now exclusively to tomatoes. They begin to fruit them right away after tomatoes are gone in the fall, and tomatoes, cucumbers and lettuce are about the only crops that are raised in greenhouses about Chicago extensively now; radishes do not pay.

I want to say in relation to rhubarb and asparagus, they are grown almost exclusively under the benches and may be grown in a warm cellar, they do not require the light; if they have no light they become black and sell for a much greater price than if they have the full light.

HORTICULTURAL EDUCATION.

H. Breckenstrater.

Formerly, and up to the middle of the present century, young men were taken as apprentices and taught the rules of cultivating, pruning, grafting and propagating. After having mastered these, he was promoted, as merit warranted, to higher positions of responsibility and finally became in his turn, a teacher of a new generation of gardeners.

That perhaps was ample preparation in his day, but in this day of progress, of discovery and competition, horticulture has risen to a great economic industry and its details have been greatly complicated. By the discoveries made in all branches of scientific knowledge connected with horticulture it can scarcely be doubted that a more scientific instruction is rendered necessary. The recent progress in chemistry, biology, bacteriology, knowledge of fungus and insect enemies of cultivated plants offers so many remedies to hitherto hopeless cases that no reasonable aspirant to horticultural fame can afford to pass by the aid which science offers him.

Governments recognize the importance of such training; the national state government maintains a great Department of Agriculture at Washington whose business it is to collect and disseminate agricultural knoewldge; it also helps to maintain the state experiment stations and agricultural colleges who offer regular courses of instruction in agriculture and horticulture and which have become such an influential factor in our nation. The modern idea of applying the advantages of education to the practical work of the garden rests upon the hypothesis that horticulture is a science as well as an art; that it is the application of principles and not of mere physical energy and rule of thumb, that it demands much science pure and applied and not merely a cast iron back with a hinge in it.

The first Englishman who applied science to agriculture was the famous chemist, Sir Humphrey Davy, who wrote the first treatise on agricultural chemistry. He had to meet then as we have now the oft repeated argument as to the superior value of practice to theory.

It is no unusual circumstance, he writes, for persons who argue in favor of practice and experience to condemn generally all attempts to improve agriculture by philosophical and chemical methods. It has been said and with much truth that a philosophical chemist would make a poor farmer and this undoubtedly would be the case if he were a mere philosophical chemist and unless he had served his apprenticeship to the practice of the art as well as to the theory.

The same objection may be made against our college graduates, but nevertheless college work broadens and strengthens, it enables the possessor to deal more readily with novel data.. If he did not learn how to graft at college he ought to be able to grasp the art quicker and more intelligently than if he had not had the training. Some one objects that he does not know how to handle a new plant, that it does not enable him to discern at once its requirements. This is certainly true, but, training does not make him less able to discern them. Such matters are to a great extent empirical and must be learned by doing, but it can be expected that the educated young man will discern more readily and fully than another, or at least to acquire a more complete knowledge of the subject. Another objects by saying that he knows a man who can grow lettuce better than a professor of horticulture. Granted; you may also be able to find very ordinary persons on the streets of Paris who can talk French more fluently than our college professors; but is that any reason why a course in French would not aid one in the mastery of the language? If you want a man to grow lettuce only, do not bother with a college man for he has higher ambition, but if you want him to manage your place with tact and judgment and grow lettuce at the same time you may find him better.

What is most needed, is principles rather than information. Broadly speaking it is education that is needed rather than specific advice. People who demand what they call practical education really want information for a particular case; that is, they want rules for some local and flexible condition; but really this is what no one can give. The experiment stations can not tell the farmer exactly what can be done with his particular farm. The most that can be done is to supply him with general principles which he must apply for himself. He knows his own soil as no one else does, he knows his own resources and limitations, and he ought to be able to make use of general principles as they apply to his own particular case, better than anyone else. This is when a scientific training will help him.

The experiment stations may show him that there may be many causes why his crops fail, but he must ultimately decide for himself what is the fundamental trouble. He may not be able to do this tomorrow, or the next year, but if he familiarizes himself with fundamental principles and studies his land and his crops, he will, in the end, master the problem.

The enormous progress in the mechanical arts is mostly due to the application of science to the various branches of manufacture, changing processes, making them more effectual, and utilizing by-products; hence the great attention given to technical education in these lines. Technical schools such as the engineering college of our university are amply fostered by this country, and to them is due much of our prestige in the industrial world. No country is advancing so rapidly in this line as

America, while those countries who have neglected this part of their education are rapidly falling behind; this is especially noticeable of England who but a few years ago was mistress of the world in the manufacturing arts. England has neglected her industrial education and is now suffering the consequences while Germany is reaping the fruits of her efficient industrial schools by a rapid ascendency in the industrial scale.

The arts of agriculture and horticulture have the same need of applied science as have the manufactures.

Manufacturing is carried on by large forces of men under a single directing head, skilled and well trained. Agriculture is scattered over thousands of farms; the men superintending these are in much larger proportion to the mere laborers than are the skilled superntendents in the field of manufacture. For this reason there is no class of persons taken as a whole, who stand more in need of an education that will enable them to conduct their work with intelligence.

The experiment stations are doing much for the tillers of the soil by publishing the results of scientific research and by conducting experiments that are too costly for farmers to carry out.

But the hope of the future agriculture must rest after all upon a wider system of education. The rural industries will prosper just as the rural population becomes more enlightened and are able to bring to their daily work minds trained and equipped for active thinking as well as muscles trained for expert handwork.

We are entering upon a great age of industrial education. The presence of intellect is becoming necessary in the mine, the workshop, the field. Ignorance must learn or die. The crowds who are seeking the learned professions must learn that the bar, the pulpit, the medical profession are overcrowded. The ambitious need no longer enter these to gain respectability. The problems here are great enough to combat the ablest minds. The rewards of the new time will be awaiting those who bring intellect and judgment to conquer drudgery which all men seek to avoid wherever it be, in the mine, the farm or the workshop.

America has won her place by skill in which the brain directed the hand. Europe has learned from American competition that enlightened judgment counts for more than a trained hand—the mere skill which practice gives the muscle.

Taught by America, England has learned a new definition for technical education. It is not merely skill in manipulation—the skill a fool may acquire by repetition. But education in the principles of an art, in the science which precedes and underlies an occupation[1]the training of the mind which makes the laborer equal to any emergency.

By such brain skill as well as hand skill, the American has now his place.

Europe already taught by lost prestige is applying the same means.

Our position must be maintained by conscientious effort and by understanding wherein lies our strength.

POLLINATION.

C. L. Meller.

The study of pollination is yet in its infancy, in that stage when it must grope about on all fours and can hardly comprehend what it does see. What then are some of the nuts this baby has to crack?

It might not be amiss perhaps to first explain what pollination is and what end it serves. We all know that without a flower we can not have a fruit. But in the orchard we see the flower drop from the trees; so what is there in this flower that only lives to fade and die to produce the seed? Let us take a flower and examine it closely. In the typical flower, for to such we shall have to confine ourselves, there is within the colored petals a circle of small upright stems with little knobs at their ends. These are the stamens, the stems being named filaments and the little knobs are anthers. Within this circle we find a larger stem which at its end broadens out into a small disk, at its base however enlarging very perceptibly. This entire structure is the pistil, the botanist naming the various parts as follows: the broadened base is the ovary, the stem is the style and the disk is the stigma. In the anthers and in the ovary the possibilities of new seeds lie.

The pistil is the female and the anthers are the male elements of the plant and it is with these latter that our talk chiefly concerns itself. Taking a flower in the proper stage and shaking it over a clean surface we find small quantities of a dust like powder settle upon the surface. And why does it come only from flowers of a certain age? Close observation reveals that this powder comes from the anthers, wherein the little grains which constitute the powder gradually grew and when they became mature or ripe as it were, the anther burst and liberated the little grains. These grains are the pollen. They are microscopic and consist of but a single cell. This cell, pollen grain, or microspore as the botanist calls it, we shall have to consider the initial cell, or seed if you will, of a new plant. Though microscopic even when full grown this plantlet is yet of vast importance in the vegetable world, it is father of all succeeding generations. Microgametophyte the botanist calls it; a big name for a little thing, but then it produces a tremendous effect.

And now let us refer to this pollen grain again. To the eye it appears as a mass of yellow or white dust, to the possible shape of the individual grain you give no thought. But nature is conscientious in her minutest detail. She gives to each species of plant a distinctly shaped pollen grain which is peculiar to that particular species. The most general form is the ellipsoidal, then comes the spherical, but these do not limit it for we find angular forms in enough variation to delight the heart of any mathematician, and furthermore the shells of the sea are imitated in all their graceful lines. Nor is this all, for nature sculptured the walls of these tiny cells with infinitely varied design. Sometimes this takes the form of a delicate dotting of the wall or again dotted lines are found arranged in various ornamental reticulating patterns. To impress you with the variety of shape let me mention the pollen grains of the pine which have two hemispherical bladders and look like an insect head with huge eyes.

The gardener can save his seed from year to year and they still retain their power to germinate; so can we also do with some pollen, yet this is not nature's way, though the Arabs who pollinate the female flowers of the date palm by hand put aside each year some of the pollen so that if at any time the male flowers do not develop they may still insure a crop of dates for that year.

And right here permit me to draw an analogy that has perhaps not occurred to all of us. In breeding animals we are very careful to get new blood from without, to prevent, as it were, families from intermarriage. And so does nature in the vegetable kingdom. An apparently insurmountable obstacle presents itself here to the superficial observer, for all flowers of the same plant open at nearly the same time, so what is there to prevent the anthers pollinating the stigma of the same flower or of other flowers on the same plant? There are many ways to prevent this, the most common perhaps being that of ripening the pollen and the stigma of the same flower at different times, another not infrequent device is to place all the pollinate flowers on one plant and all the pistillate flowers on another, in which case we have a flower representing only one sex and said to be imperfect. On some flowers the anthers are so placed that an insect can not enter the flower without touching its body to them, and so the insect is a carrier of pollen from flower to flower. In the cultivated plants we have self sterile hybrids, and here our analogy again holds true for do we not find the mule self sterile.

Plants being stationary there must be some means of carrying the pollen. The wind and the insects do this work. The various devices of the flowers to allure the insect and make it carry the pollen are so often discussed and so generally known that they need no mention here. Suffice it to say in this connection, that no matter how deep we pry into the recesses of nature she always surprises us with one secret more. And as the husbandman must guard the seed he plants against birds, so the plant must guard its pollen against insects for there are many who relish pollen as a crow relishes new sown corn.

The pollen grain is the beginning of a plant which we must try to think of as entirely apart from the plant as we know it. Its life history is brief and as follows: After the bursting of the anthers, which occurrs only on clear, dry days, the pollen is carried by insect or wind to the stigma of some other flower where it lodges in a sticky sweet fluid. Having safely gotten thus far it begins to germinate. The food combined with the moisture in the sweet fluid nourish it and soon the pollen grain sends a long tube down through the style of the pistil to the ovary where it reaches the macrogametophyte of the botanist or better the mother of all succeeding generations. After the pollen tube has reached the ovary, two or more motile little bodies called antherozoids pass down the tube, one of which unites with the macrogametophyte. Now more than one pollen grain will grow on the stigma and send its tube down to the ovary and where there is more than one macrogametophyte the other pollen tubes will also be of use depending upon the number of macrogametophytes in the ovary as each when fertilized by the pollen produces a seed.

This microscopic plant which we have described belongs to the sexual generations of the plant kingdom, the plants as we see them belonging to the asexual or sporophytic generation. This may be new to some of us, so let me remind you that you can propagate or multiply a plant by cuttings, but to reproduce a plant you need the intervention of this little pollen-plant, if we may coin the word, which performs exactly the same function in the vegetable kingdom as the male does in the animal kingdom.

And now in conclusion let me state a few of the facts the study of pollination has yet to teach us. First of all in crossing plants we must know to what extent the pollen of flowers will germinate upon the stigma of a different kind of flower. What is the limit of the length of the pollen tube of various plant species? How does light and temperature affect the germination of the pollen? What food does the pollen grain need and what are its food limits? How long will pollen retain its vitality or ability to germinate? These and many other questions confront us, which if we answer only in part we shall have done much to make our orchards and small fruit more uniformly productive.

HORTICULTURE AS AN INDUSTRY FOR WOMEN.

Miss M. E. Benson.

The first woman was a horticulturist. Back in the dawn of "creative morning" she was set to watch and tend in that symbolic garden, where was "every herb bearing seed which is upon the face of the earth and evry tree in which is the fruit of a tree yielding seed."

Life was an ecstacy. Each day she awoke to a new mystery. Expanding bud and unfolding leaf held sweet secrets into which she pried with a loving curiosity. She was in close touch with the great Heart of all nature. The burden of work had not yet fallen upon her.

Then came that unfortunate fruit-gathering in which she was the chief performer. No longer conscience free, clear-eyed, spiritual, she was driven from this ideal existence she could no longer comprehend.

Yet to her blurred vision something remains of the past splendor. There come rare moments when the veil is drawn aside and she catches glimpses of the lost Eden, when she has a dim understanding of great purposes, of the workings of the plan of the universe. We call it inspiration, poetry. Then she is back groping in the dark, bearing the dull, dreary routine of her unceasing task. In the exchange of the spiritual life for a material world the struggle of existence began.

It is a long leap from the beginnings of our race to the present day, yet the problem that confronted the first woman is an ever recurring one. Food, shelter, clothing; How can I best earn a livelihood? Most women, either single-handed or in conjunction with father, brother or husband, must take up the burden of providing a share of the necessities of life. A history of the manner in which women have met the situation would be a history of civilization.

Going back no farther than the last century, we see a marked change. Almost a revolution has been made in her wage-earning capacity. The enlargement of her opportunities for education, the growth of business, the territorial expansion of the country and the consequent breaking down of the hedging customs of an established mode of living have worked together to broaden her field of labor. To-day almost anything she chooses to do and can do she may do, and so we find her harking back to that primal garden where the mother of the race, that typical Eve, tended the fruits and flowers.

And what more fitting? She has been dallying with the make believe products of the milliner, twining artificial roses and vines on the hats of her sister women, stifling in the close work room, cramping body and mind over monstrous imitations. Now she is learning that taste and artistic ability will yield as large and perhaps larger returns if expended in the arrangement of flowers with the dew yet trembling on their petals.

Here and there in the small towns and even in large cities we find women engaged in one of the various branches of horticulture. It may be as a floriculturst, starting tentatively with a small greenhouse, growing more courageous as success follows her efforts, adding here a little, there a little, till she has a flourishing establishment. I have in mind one who has built up a business where men have failed. A loving touch, the eye of an artist are hers. Flowers fall into beautiful designs under her fingers. Energy and industry, united possibly with the sagacity she inherits from her lawyer father, have been factors in her prosperity.

With the increase of wealth in our land have come many new wants and necessities. The old time cellar beneath the house and mound in the field do not longer supply the table with vegetables after the brief months of summer growth and freshness. The bright green salad, the ruddy radish, with their cool crispness give life and color to innumerable tables in season and out of season, and while yet the ground is white with snow a penetrating perfume stirs memories of a garden in some long ago summer where the cucumber vines sprawled in rank luxuriance, or a finer fragrance wafts us back to a sunny hillside with the strawberry lurking in the grass. The commercial spirit of the age is eager to meet the growing demand. A practically new industry has sprung up. Perhaps it would be more correct to say is but just coming into existence, for the possibilities of the business of growing vegetables for a winter market are but partially comprehended.

It is an industry peculiarly fitted to women. Some have already proved it so. Much of the work can be done without exposure to the inclemencies of the weather. It demands attention to detail, niceness of perception, appreciation of differences. There is room for taste and skill in arrangement, a branch of the business hitherto not fully realized.

But there are others who would work out in the free air, who long for a touch of the breath of heaven against their cheek. They would meet the morning sun face to face. For such the raising of the small fruits offers an opportunity. Here too women have made the experiment and with good results. It is an ever broadening field. The American people are fast becoming a nation of fruit-eaters.

Again, much of the work is peculiarly adapted to woman's strength and endurance. The picking of the fruit, its preparation for market, need her skill and taste, her deftness in manipulation. She has always been in the ranks of the laborer in this branch and is fast finding that she can also be the manager and capitalist.

But there are reports of others still more ambitious who are growing the tree fruits and with profit. Not content with the apple orchard on the old home farm, they are raising oranges in California, prunes in Oregon and peaches in New Jersey. They are venturing in a timid way as yet, but looking with hopeful eyes to a larger harvest in the not distant future.

One woman has bought a few acres on a hillside back from the Hudson in Orange county, New York. Most of the year her work holds her in the city, but with the first hint of spring she is off up the river to see what havoc the winter may have wrought. After that every Saturday and Sunday and all her vacations find her among her vines and trees. Does it pay her? In dollars and cents? No. A fruit farm is like any other business, managed by fits and starts the balance will be on the wrong side of the ledger. But there is sometimes a compensation that is beyond a cash valuation. In the pleasure she finds in her enlarged existence, the respite from the nerve wearing life of the city and the health she breathes in with the air of the hills, she feels more than recompensed.

It is not to the weary office woman, the broken down school teacher to whom we must look as the future horticulturist. They go to their work untrained, with the best of their life and energy already gone, and though a moderate success may and probably will follow their efforts, yet the highest returns must come with thorough preparation, a youth spent in the business and the knowledge gained from a large experience.

Men often find irksome the nice regard to detail upon which the certainty of reward depends. They want to farm broad acres and like not an industry that binds them down to a limited area. They would reap their golden fields with a wide sweeping harvester and count their cattle scattered over many acred pastures. But a woman is content to gather her crop in a basket.

We like to think of her as coming to us laden with the dainty, delicious fruitage of the summer. It is thus that the artist paints her. Let her take up the tools her brother has thrown down in his eager rush to the city, leaving to those who know not the joy of the out-door life the weary monotony of the office and the persistent tick of the typewriter and telegraph. Let her devote her energy to searching out the secrets of the growing plant, helping it to fight its enemies, encouraging it with her own enthusiasm till it reaches its highest development. Then in this wider life, she will find not only a livelihood, but a broader influence, the health and beauty which are hers by birthright, and approach more nearly that perfect womanliness which is our hope and inspiration.

CARE OF FARM ORCHARDS.

J. C. Shottler.

The orchard like every other crop needs care and cultivation, but this is the thing that farmers generally neglect. They will cultivate their corn and care for all the other farm crops but never think of cultivating their orchards.

They are used to the old way of planting their trees in some old corners wherever there is room for one and never expect to do anything to them, except to gather the fruit if nature has been generous enough to produce a crop. If the trees fail they wonder why it is that their trees do not thrive and bear as nice fruit as they see on the market. They do not realize that it is their own fault and that mother nature does not bestow her rewards unless we are willing to work for them. In the early years the farmers could raise a fair quality of fruit without much work. The land was fertile and there were no insect enemies nor fungus diseases to fight. The farmer's first attention should be called to the benefits derived from thorough cultivation. Start early in the spring as soon as the soil is fit to work. First using the plow to encourage deep root penetration and afterwards shallow cultivation at least every two weeks and after heavy rains as soon as the land is dry enough, so as to prevent too rapid evaporation and the baking of the soil. Cultivation should be kept up until about the middle of July when the wood growth of the trees should be completed and the trees given a chance to mature their wood and develop their fruit buds.

The use of some kind of cover crops to check heavy wood growth is recommended. Such crops draw a large amount of the moisture from the soil thereby checking the tendency of the trees. Cover crops also protect the roots of the trees in winter for they tend to hold the snow and thereby preventing the frost from penetratng the ground to any considerable depth, thus saving the injury of the roots by frost. The cover crop should be plowed under in spring to provide for the humus in the soil. Nitrogen is most economically supplied to the soil by sowing some leguminous plants for cover crop and turning them under in spring.

Pruning is another very important matter. It should be done at least once a year and preferably in the spring before the sap begins to flow, so as to prevent the loss of stored food through the flowing of sap from the wound. If branches tend to interfere with each other they should be removed, all water sprouts should be cut out and if any branches grow out farther than the rest, they should be cut back so as to make a symmetric tree. In pruning a tree the aim should always be to secure an open crown so as to permit the free circulation of air which will produce better colored fruit and tends to prevent fungus diseases. A little pruning should be done throughout the summer. If any shoot is growing where it ought not be, cut it out the first time you see it, and also any buds starting from the trunk of the trees should be rubbed off as soon as they appear.

Another thing to watch out for is sun scald; this generally occurs in the months of June and July when the sun's rays are strongest and with the afternoon's sun from 12 to 3 o'clock. The sun's rays heat the trunks of the trees to such an extent to scald the cambium and after this it dries up and no more sap is carried by it, the result being the drying up of that side of the trunk and cripples the tree for the rest of its life. This can easily be prevented by protecting the trunks of the trees with some protector such as rye straw, veneer, lath, or even a board fixed at the south side of the tree so as to shade the trunk of the tree during the hottest part of the day is very effective.

One of the enemies to look out for is the borer. Several preventive methods have been given to the public, but I think the best way is to enclose the trunk with some covering material so as to prevent the beetle from depositing its eggs on the trunk of the tree. Fine wire netting, veneer or tar paper will be found suitable. These coverings should extend three or four inches below the surface. Should the borers already have gained a foothold, they may be dug out with a strong knife and a wire. The covering may also serve as a protection against sun scald. The only way to find the borer after it has entered the tree is to examine the trunk of the tree near the ground late in August or early in September when the presence of the larvae may be detected by the discoloration of the bark over it and the presence of saw dust. It may then be cut out and destroyed.

The codling moth is another enemy which does great damage to the fruit. This enemy may be held in check by spraying with Paris green at the rate of a 1/4 lb. to a barrel of water. The first spraying should be given just when the petals have fallen and another about ten days later. After the larvae has once gained an entrance into the fruit no poison can reach it.

Most fungus diseases may be prevented or held in check by spraying with Bordeaux mixture. The first application should be made about the time when the buds begin to open and repeat two or three times until the leaves are fully expanded. It should be remembered that application of Bordeaux mixture is for prevention and no cure should be expected if the disease has gained a foothold. Bordeaux mixture is made as follows: dissolve 5 lbs. of blue stone in two gallons of water and slack 5 lbs. of fresh lime in two gallons of water; add the lime to the blue stone and then add water enough to make 50 gallons. To this mixture paris green may be added and thus saving the time of a separate application.

Next comes the fertilizing of the orchard. The farm orchards are generally provided with too much fertilizers than too little which makes the trees grow too fast and thus become subject to blight. It is best to wait with the application of fertilizers until the trees make a moderate slow growth and produce good crops. Wood ashes are a very good fertilizer for the orchard because they contain large quantities of potash and phosphoric acid and these are the elements most needed by the trees.

It is almost impossible to induce the farmer to cultivate, prune, spray and care for his orchard for the single reason that he has never tried it. He has been accustomed to sack up the fruit as a gift crop and this era is a very persistent one. But let him once try it and he will soon find out that it is no more work to spray, prune and cultivate the trees than it is to cultivate the potatoes and poison the potato beetle. And in figuring up the amount of work and expense applied to the orchard, and the returns he gets from it, he will be surprised to learn that one day's work in the orchard brings greater returns than two or three days' work on other crops.

STARTING A YOUNG ORCHARD ON A FARM.

J. P. Bonzelet, Eden, Wis.

The first thing to be taken into consideration in the planting of a young apple orchard is the selection of a site. In the selection of a site for apple growing, the injurious effects of exposure to intense heat and cold should be guarded against as far as practical. This may in part be accomplished by selecting a northern or eastern slope which is quite safe against the direct rays of the sun. The site if possible should be elevated above its immediate surroundings so as to give free air. drainage, and also to ward off late spring frosts which often kill the blossoms.

The apple may be grown on almost any soil but the best results are obtained on soils from which native forests have been cleared. Here as a rule the physical condition of the soil is such as to afford both ample surface drainage and subdrainage. Such lands are well supplied with the various kinds of plant food essential for a healthy wood growth and well developed and matured fruit buds. Fruits from trees growing on such locations possesss the richest quality and highest coloring. But other locations may be successfully used if the soils receive the necessary preparation before planting and careful cultivation thereafter.

Clay soils require more labor in their preparation and often need manuring and frequent cultivation and subsoiling.

The soil should be frequently stirred during the summer months and especially during continued drouths so as to form a mulch of dry earth near the surface as this will greatly aid in consuming what moisture there is in the soil.

Clay soils do not produce such vigorous growth and trees on such land are not so apt to be attacked by blight. With an open subsoil underlying it a loamy clay soil will probably yield the best results, especially if it be well prepared by thorough cultivation and subsoiling before planting. Nearly all lands for orchards should have both thorough surface drainage and subdrainage. No orchard will endure for a great length of time with stagnant water either upon the surface or within the soil. All surface water from excessive rain fall or other causes should be promptly removed by either surface drainage or subdrainage. It the natural formation of the land does not afford such ready drainage it must be provided artificially.

A site that requires ditching is not suitable for an orchard.

Subdrainage is preferable and is much more thorough when supplied with well-laid tile.

A breaking up of the subsoil will afford temporary drainage in a clay soil but in a few years the soil will again become compacted when re-stirring will be difficult on account of the roots of the trees.

In all cases the plants should be the judge of the special requirements of his soil and location as to drainage.

The autumn months are generally regarded as the best time to prepare lands that are designed for apple orchards.

The plowing should be as deep as possible, and if the subsoil is a stiff clay it should be subsoiled by running a subsoil plow in the furrow made by the turning plow. A good plan is to back furrow the land so as to leave the dead furrow where the rows of trees are to stand, thus leaving it in a condition for the ameliorating effect of the frost. It would be beneficial to break up the bottom of this dead furrow by running the subsoil plow through it two or three times giving it a good stirring. This method will afford deeper tilth under the trees and allow surplus water to pass off it the orchard is laid out with this object in view. If the autumn preparation is thoroughly done there will not be any need of more than a surface stirring of the soil in the spring. If the land selected is not in a fertile state at the time of plowing, it should be enriched with thoroughly rotted stable manure spread broadcast over the land before it is plowed. Manure is sometimes successfully used by applying it to the land in the fall as a surface dressing allowing it to remain until spring when it is thoroughly worked into the soil with a plow or heavy two-horse cultivator. Unleached ashes spread about the trees after they are planted afford an excellent fertilizer. After the selection of a site and the preparation of the land to be planted to an orchard comes the purchase of trees and selection of varieties. In the first place avoid all agents as a rule. They cannot be depended upon and it does not pay to take chances on getting inferior trees. In the second place buy nothing but the best grade of trees as they will be the cheapest in the end. In the third place if you are going to buy your trees from a nurseryman, deal directly with him and deal only with reputable firms. By dealing with the nurseryman direct you save the agent profit, and at the same time insure getting good trees. But in my opinion it would be profitable and advisable to buy seedlings from the nurseryman and then go to the nearest orchard and buy scions of such varieties as you may wish to grow, and then graft your own trees. In this way you would be sure to get trees that are true to name, and the cost would not be as much as it would be to buy the trees.

A vigorous, well rooted, straight trunked, two year old tree is considered the most economical kind to plant. But a one year old tree is preferable to any tree over two years old. As a rule trees are too old rather than too young when purchased to be planted out in the orchard to be the most successful.

As to selection of varieties, this is a very difficult question, because there are a great many things to be taken into consideration, such as the kind of soil that the different varieties are best adapted to; climatic conditions; vigor and hardiness; the demands of the market that the apples are to be grown for; the keeping quality. The planter will have to judge for himself according to his own particular location, what varieties are best for him to grow.

The proper distance to plant trees apart in an orchard is from thirty to forty feet, according to the variety and the fertility of the soil. The distance, whatever it may be, being determined, the planter should fix a base line from which to proceed so that the orchard will be square as it will greatly improve its appearance.

In pruning young trees that are to be set out, all roots that have been broken or badly bruised should be cut off, and the cut should be made so as to slope from the trunk of the tree. After this has been done, the top should be pruned in proportion to the amount of root system left. But the planter should not be afraid to prune and should prune severely, at the same time balancing the top of the trees as well as possible; the trees should be headed low. After this has been done, the roots should be puddled. This is done by digging a shallow hole in the ground and then making a puddle of soil and water in it, then dipping the roots of the trees into it, after which they should be planted at once. In planting young trees, care should be taken to place the roots in their natural position. The hole should be dug large enough to allow ample room for the roots as they should never be cramped in an unnatural condition, as is too often the case on account of the hole being too small. The soil should then be well worked in about the roots so that all the roots come in contact with the soil. The soil should be firmly pressed about the roots, the aim being to set the tree as firmly as a post.

After the young orchard is planted, cultivation is a necessity for its life and future well being. Generally speaking, a crop should not be grown in the orchard. If a crop must be grown, let it be potatoes or beans or some crop of that nature. Hay or grain should never be grown as they are injurious to the trees. There should be some cover crop sown during the latter part of summer so as to have a crop large enough to cover the ground entirely during the winter and early spring months. This crop, however, should not be allowed to continue its growth. As soon as the ground is dry enough the following spring it should be cultivated or plowed under.

In conclusion I will say that I believe an apple orchard properly managed in Wisconsin will yield more profit for money and work invested than any other crop.

DISCUSSION.

Mr. Landwear: I did not understand the young man, although I believe he stated in the paper, when was the best time to prune trees.

Mr. Bonzelet: Some time in the spring before the sap begins to flow. I would prefer to prune as soon as I could, somewhere the end of February or beginning of March, and then prune up until the time the sap begins to flow, but it had better be done before the sap flows, otherwise there will be loss.

Mr. Periam: Why put off pruning till spring, you might as well not do it at all.

Mr. Bonzelet: Well, if you do it in the spring the tendency is not so much to dry out the wound. If you start before the spring, it will heal over, and there will not be any drying.

Mr. Buehler: Would it be sufficient to do it just immediately before the sap went up?

Mr. Bonzelet: Well, it is all right to do it just before, but I would prefer to do it probably three or four weeks before.

Mr. Periam: Does not the sap move in the winter?

Mr. Bonzelet: It does to some extent, but not very much; there is some movement of sap all the time, unless the trees are entirely frozen.

Mr. Barnes: I am delighted with the papers of these young men; I think their suggestions are all practical and to the point, but there is a little idea occurs to me, in regard to searching for this borer that one of the gentlemen spoke about. I would like to say to you, it will help you all and save a great deal of work and be just as effective as it will to search for him, simply to clean off the dead bark and clean out the saw dust, and take a common parlor match, insert the head of the match and break it off and wax it over with a little wax or mud. The sulphur on the end of the match will soon begin to steam from the moisture in the tree, and it will destroy the borer as effectively as it would to prod him to death with a wire; it is much easier, it requires less than half the time and is more effective.

Wednesday Morning Session.

HORTICULTURE IN THE SCHOOLS.

In the very beginning of the old book loved by our mothers, we are told how God created and gave to man every herb-bearing seed and every tree yielding fruit. "Out of the ground made the Lord God to grow every tree that is pleasant to the sight and good for food. Then the Lord planted a garden eastward in Eden, and there he put the man whom he had formed." Amid the beauty and purity of Eden the man created in God's own image made with his helpmeet the first home.

I like to think of the world as the home of man. Each day Mother Earth swings her mighty rivers, vast oceans, great forests and majestic mountains through alternate shadow and sunshine—ever into the light and glory of a new day. Each year she rolls north and south from the broad belt of eternal summer wide billows of blossom that sweep far toward the icy poles to leave in their wake ripening fruit and golden grain to gladden the heart of man.

This world of beauty is man's birthright. It is the joy of every true teacher and worthy parent to open the eyes of the children to the brightness and beauty of the world. A great teacher of to-day has truly said, "The most beautiful thing in the world is the look of wonder on the face of a child." In every soul there is something that responds to beauty, if the thousand eyes of the mind are early opened to the grace of flower and bush and tree, to the glory of earth and air and light and sky.

In a broad meadow of the lower Wisconsin, I found late one August afternoon a long slough, bordered on each side with the light green, graceful leaves of the sagittaria. The slough itself was filled as far as the eye could reach with the most magnificent water-lilies. Great was the longing to secure them.

The early morning found me in a boat amid the lilies, drinking in the beauty of the morning sunlight as it came through the graceful branches of overhanging elms and gave added beauty to the snow-white cups filled with golden stamens. Soon with a double armful of lilies and sagittaria blossoms I started on my three-mile tramp to the village. On the way was a creamery to which the farm wagons were coming with the morning milk. One of these was the rudest outfit seen in many a day. The dilapidated old wagon was drawn by the poorest team imaginable. On a rude board laid across the battered wagonbed sat two ragged boys. Their eyes never left the lilies from the time they caught sight of them. Just after they had passed the younger one said, "Golly! George, ain't them there flowers Jim dandies!" Reaching my room I selected a bunch of the blossoms and took them down to my cultured hostess. Lifting a delicate blossom with her finger she said, "Aren't they exquisite?" Just then her romping daughter of fourteen came bounding into the room and exclaimed, "O mamma, aren't those lilies just perfectly too-too?" Noting the look of mild reproof she added, "I mean, mamma, aren't they too—too beautiful for any use?" A cut-glass bowl was deemed worthy to contain the great bouquet intended for the institute. Hurrying up the village street, I passed two little tots seated on the edge of the sidewalk. Seeing the flowers they held out both hands in mute but resistless appeal. For answer to the question, "Do you like flowers?" each little face was quickly dipped among the waxy petals and golden stamens.

As I was hurrying on again, there came a voice full of reproach from a boy just inside the garden fence, "Say, mister, I like flowers too."

On the narrow walk running up the hill toward the schoolhouse I saw coming slowly toward me an aged man on crutches. His long silver locks fell about a face of remarkable peace and purity. I stepped from the narrow walk to allow him to pass, just as he halted to rest a moment on his crutches. As his eyes fell upon the flowers his face fairly glowed. "Sir, would you mind sparing one of your flowers for an old man?" Quickly several of the fairest blossoms were placed in his hands. As the old man gazed at the flowers he forgot the giver and failed to speak the word of thanks. But as I slipped away I heard him say in tones of deepest feeling, "Himmlisch schön! Himmlisch schön!" Something in their beauty and fragrance had entered the inner chamber of sacred memories and stirred the fountain of feeling. The old man was a boy again, back in the Fatherland, and in the mother-tongue was telling the beauty of the blossoms: "Heavenly beautiful! Heavenly beautiful!"

A group of young men standing by the schoolhouse steps expressed their admiration for the flowers, and louder expressions of delight came from a bevy of girls who gathered quickly about the organ to admire the flowers and find out where they were obtained. I stepped aside to write upon the board a little poem for opening exercises from Tennyson:

"Flower in the crannied wall,
I pluck you out of the crannies
And hold you here root and all in my hand, little flower;
But, if I could understand what you are—
Root and all and all in all,
I should know what God and man is."

As I wrote the group vanished and a quiet young woman came to look deep into the flower, but her lip quivered and she turned away to hide the rising tide of tears. The flowers had touched for her some sad, sweet memory.

At the close of our exercise on the poem, I held up the bowl of fragrant blossoms and asked, "What do they bring to you?" To one they recalled Lowell's tribute to June:

"And what is so rare as a day in June?
Then if ever come perfect days;
Then Heaven tries the earth if it be in tune,
And over it softly the warm ear lays;
Whether we look or whether we listen,
We hear life murmur or see it glisten;
Every clod feels a stir of might,
An instinct within it that reaches and towers,
And, groping blindly above it for light,
Blink to a soul in grass and flowers."

Another said, "As you held up the flowers before us, I thought of how long the plants had grown in that slough and through the long summer months had gathered up the sunshine. Now they flash forth that garnered sunshine in the light and color and fragrance of the flowers."

What did it all mean? The uncouth farmer boy's "Golly! Ain't they Jim dandies–" The cultured mother's "Exquisite;" the romping daughter's "perfectly too-too;" the eloquent silent tribute of the children; the old man's depth of feeling that carried him back to boyhood home and mother tongue; the tribute of young men and merry maidens; the silent tear, the poetic recognition of garnered sunshine; each was the tribute of a soul to the moving power of beauty—the power to touch and awaken the fountains of deepest and purest emotion.

The great state today bestows her wealth with lavish hand to furnish free education from kindergarten up to and through her great university. The commonwealth makes this investment to win later as rich dividends broader, more intelligent manhood, stronger and nobler womanhood. Whether we regard school as preparation for life or as a part of life itself, the environment of the school should have vital connection with the activities of home and community and should be such as to call out the best qualities of head and heart.

That the schoolgrounds should be made the most attractive place possible has long been incorporated as one of the essential articles of my pedagogical creed. To every man that asketh a reason for my faith answer is gladly given. Man's taste and character are in large part fashioned by his surroundings. The better tendencies of head and heart draw new life from environment marked by purity, taste and refinement. Beautiful surroundings render the school itself more attractive. To enlist the aid of boys and girls in improving and ornamenting the schoolgrounds means to cultivate *esprit de corps* that makes them more loyal to the school and its interests. The joy coming from helping make things go in their little republic will lead to future loyalty in the broader citizenship of community, state and nation. To the children whose parents have neither time nor means to provide their homes with things of beauty, an attractive schoolground becomes a joy forever, and, no matter how humble the home, it gladly greets every effort to cheer and brighten the life of the children. A beautiful schoolyard in village or town means improved home-yards and better kept lawns; and such a yard always means added interest and readier aid on the part of patrons.

Many years of patient, persistent effort to improve schoolgrounds have produced some results and experience that may prove suggestive. The loyal work of the young people in Dodgeville has made their schoolgrounds the pride of the town. Twenty years ago many an enjoyable trip was taken to the woods to find there hardy trees of attractive form, to take them up with care and then to set them again in the earth where they give today delight to troops of happy children. The favorites of all were the elm, the hard maple and the linden. Hedges of arbor vitae were planted to screen the back yard. A good lawn was secured, and each spring a thin coating of land-plaster and ashes many times repaid its cost by the increased richness of coloring and rapidity of growth quickly seen in the velvety carpet. Clematis, climbing rose and Virginia creeper planted around the building gave to the bare walls the grace and comeliness of their green drapery. Bright flower beds with vases and rustic baskets added color and beauty to the scene.

For nigh twenty years students, teachers, janitor, board and people have helped preserve and enhance the beauty of these schoolgrounds, until they are today the pride and joy of the town.

In Sparta the outlook for an attractive yard was rather discouraging. The high school was situated on a knoll of sand that looked bare and uninviting. However, there were some handsome elms and oaks, and the natural slope of the yard was suitable for a lawn if the grass could only be coaxed to grow.

The matter was quietly agitated among the young people and they were soon enthusiastically in favor of improving the grounds. The boys of the senior class took a twenty-five dollar job and turned the proceeds into the decorating fund. Students and teachers soon gave all the money needed. A citizen excavating a large cellar donated fifty loads of loam. Sand holes were filled, the grade improved, and a large space in front of the building neatly sodded. The rest of the yard was treated to a fertilizer and a liberal supply of grass seed. Several large iron vases were purchased and some rustic baskets made. Baskets and bedding plants were secured from the greenhouses. On Saturday there were plenty of willing hands to sift the soil, to help make flower beds, to set up rustic baskets, to rake up and wheel off refuse rubbish, to dig up plantains and dandelions.

As the yard improved in appearance the chronic croaker leaned on the fence long enough to encourage the workers with the assurance that the flowers would soon be stolen or destroyed and the sand bank would again come to the surface. The croaker's words were soon forgotten in the enjoyment of smoothly shaven lawn, neatly trimmed trees, handsome vase and mound.

Fifty dollars were earned the next season toward securing an artesian well; but the district meeting voting two hundred dollars to give us a ten-foot flowing well, and our money went to secure a fountain and a couple of drinking-places. A rustic bird house attracted the bluebirds and martins and the children gave them royal welcome when they returned each spring to make this house their summer home.

Later came plans for a new high school building. While the handsome new building was going up, fire destroyed the old one. This necessitated a second new building on the same block, and when both were completed and the grounds regraded, not a blade of our grass remained. The clear sand was again at the top and matters looked rather hopeless, but Spartan grit again attacked the knoll of sand. The high school elected by ballot a "Committee of Ways and Means." One member came from the school at large and each of the four classes chose one representative. These five energetic young people fully justified the name of the committee and from their wise heads soon evolved ways and means to win success.

Two hundred fifty loads of good soil were dumped outside our borders. Companies were formed to provide wheelbarrows, carts, shovels, spades and rakes. A merry crowd of more than two hundred were soon at work wheeling in the soil, leveling the surface, breaking lumps, carting away debris, or smoothly raking the added soil. Students and teachers worked at the task night after night and a couple of Saturdays were thrown in as extra arbor days. Grass seed was secured and sown. Two men were hired to sod the boulevard outside our walks. Shrubs and young trees were purchased and planted. Next a tight board fence was built to cut off the back yard and in front of this fence were planted vines and a long border of shrubs and perennials to form an attractive background. The city fathers donated water to keep our lawn and plants in good condition.

New vases and baskets were added. The fountain repainted and reset. Beds of choice pansies graced the sheltered nooks. A fernery and a garden of wild flowers were begun. Beds of geraniums and verbenas and the well-filled baskets added color and beauty. Every student gave his mite to help along the good work and most of them gave muscle too. So each became a loyal protector of that in which he had invested both capital and labor. The public spirit thus engendered made even the roughest boy take pride in the beauty of "our school yard" and made each one a guard so true that every adornment of school was safe from injury or theft.

The horticultural societies can do much in each community to organize for such efforts to make more beautiful the school houses of our children. There is especial need of such effort in the rural districts. In my mind there is a composite picture of more than one hundred country schools visited in ten different counties during the past two years. That composite picture brings a touch of pathos. The rude box-car structure with its barren, uncared-for grounds, devoid of tree, or shrub, or vine to hide its utter nakedness, with the unsightly outbuildings standing out boldly in all their ugliness—often so filthy and so polluted with obscenity that every fiber of manhood longed for match or torch to destroy that which must pollute the very fountains of purity. Inside the dingy bare walls, the absence of pictures, the dearth of equipment, the want of good teaching, the destitution of ideas, deprivation of even pure air and sunlight sometimes seen in the rural school brings a feeling of pain and chagrin that such things are possible in a state bearing the proud motto "Forward."

Do you wonder that children dislike such a school, fail to learn therein, and long to leave it? Has such school aught to do with the farmer boy's growing antipathy toward farm life? Even before he is old enough to reason, he comes to dislike surroundings that are both depressing and degrading. It is my firm conviction that attractive home surroundings, pleasant playgrounds at the rural school, and schoolwork more in touch with life work will do much toward keeping more of our best boys on the farm.

Ian Maclaren thus paints a rural school in bonnie Scotland: "The country road winds through the sweet pine woods toward the upland farms. In a clearing surrounded on three sides by the tall Scotch firs and on the fourth by a brake of gorse and shrubbery there stood the little country school. Some one with the love of God in his heart had set the schoolhouse in that clearing. Here the children, sheltered alike from burning sun or biting blast, played most merrily. In the woods they wandered, breathed the fragrance of the pines, plucked the springtime blossoms, listened to the song of birds, filled the woods with laughter, shout and song that made music in the heart of old Domsie, the schoolmaster who had given his life to the lads and lasses of Drumtochty."

Who of you with love of flowers, and country life and children perennial in your heart will return home to make one such schoolyard in Wisconsin? It will bless and brighten child life in your district, help make a better school and more attractive home surroundings, and render men and women more content to dwell in God's own country.

"Spacious and fair is the world;
Yet, oh, how I thank the kind Heaven
That I a garden possess, small though it be,
Yet mine own:
One that enticeth me homewards,—
Why should a gardener wander!
Honor and pleasure he finds,
When to his garden he looks."

Thus writes the greatest of German poets, voicing the typical German love for garden and posies. The sturdy German emperor evidently believes in the educative power of a garden. Each of his seven children has a garden of his own in which he works, sows the seed, and cares for the plants. Thus these young Hohenzollern princes learn lessons that books and tutors cannot teach.

In central Europe *the school garden* has for some years been regarded as an essential part of the school. Nearly one hundred thousand school gardens are now found in central and southern Europe. For fifteen years no plan of a school building has been accepted by the French government unless a school garden was attached.

In our own land during recent years some school gardens have been started much to the joy of city children. Listen to the prophecy of the greatest leader of his own race and perhaps the wisest teacher of our time, Booker T. Washington: "I hope that the time will soon come when there will be a revolution in the methods of educating the children, especially of the smaller towns and rural districts. I believe that the time is not far distant when every such school is going to be surrounded by a garden and that it will be one of the main objects aimed at by the course of study to teach the children something about real country life and about the occupation that their parents are engaged in.

"I am glad to say that in the Tuskegee Institute we now have in process of erection a new schoolhouse in and about which so far as we can the little children of the town and vicinity will be taught in addition to books the real things which they will be called on to use in their homes. There will be about the schoolhouse three acres of ground on which the children are to be taught to cultivate flowers, shrubbery, vegetables, grain, cotton and other crops—to be taught the things by which they live. We are not going to call this building a school-house because the name is too formal. We are going to call it the Children's House."

Wisconsin is the pioneer in establishing county agriculture training schools, and these new schools just opened at Wausau and Menomonie are attracting national attention. In connection with these schools the law requires at least three acres of land for practical experiments in farming and gardening. These schools will do much to inculcate a love for farm life and work and their influence will reach out in a most helpful way to the rural schools of the state.

The greatest problem of our land today is the problem of the rural school. The only solution of this great problem appears to be the consolidation of rural schools and transportation of pupils. In the coming generation I have faith that the little box-car rural school with its bleak and barren surroundings, and pitifully poor opportunities will be displaced by larger central schools that shall bring out to the country boy the same privileges of graded and high school that are now enjoyed by his city cousin. To these central rural schools shall come beauty of environment, school gardens, opportunity for manual training and all that shall make school attractive and connect it closely with the activities of home and community. Then indeed will such school be not alone preparation for life but even life itself for the country boys and girls. Then indeed shall every farm lad have opportunity to develop skill, intellect, and culture that shall make him a peer of the best the city can produce. Then shall the country youth build him a rural home to dwell with a helpmate well content in a region fair as the garden of the Lord with pure air, clear sunshine, open sky.

J. W. Livingstone.

WEDNESDAY MORNING SESSION.

On motion of Mr. Edwards, Mr. J. W. Reasoner, of Urbana, Illinois, was made annual honorary member.

On motion of Mr. Marshall, Mr. Green, secretary of the Iowa State Horticultural Society, was made annual honorary member.

Mr. Marshall made the further motion, which was carried, that those who participated in the exercises of the previous evening be made honorary members.

The President: Reports of delegates to other state meetings are now in order. I can make my report in very short time, and there will be supplementary reports.

I was a delegate to the Minnesota State Horticultural meeting this winter, and I must say that I had a royal good time, and I want to say further that I would like to have all the apple men in Wisconsin go to Minneapolis and watch those people; they are almost, if not quite, crazy on the subject of apples, and they are right about it, of course. I like the enthusiasm that they display in that respect. They had the greatest display of seedlings that I ever saw, that is, in number. They have been trying every year to find the thousand dollar apple; they perhaps have not quite succeeded in doing that yet, at least it is not determined. They are proceeding somewhat on different lines from what we are. They are trying to conduct experiments there in a more scientific manner. the Society has taken it up particularly, and I believe the time is coming when this Society must do something in that line, that they must make a beginning; results may be far off, but there must be a beginning made to conduct a series of experiments in a regularly scientific manner in regard to pollination and everything of that kind. That would be, I think, a very good line for the Society some time to adopt, and the sooner the better. I do not wish to say anything more of that, and I will leave a further report to those who are better able to make it.

Mr. G. J. Kellogg: If you want to get enthusiasm in fruit interests, go up to Minnesota, and if you want to get waked up, go up and live there; the cold weather stirs them so that they get around and do something and know something. The offer of that one thousand dollars for that one apple is waking up the whole country clear to California. One of the finest apples on exhibition that competed for that thousand dollar prize came from California. The finest one that I think was there was the one that was shown here yesterday on the table. They are offering $50 for the best new seedlings of winter varieties; there was one who brought out 57 kinds, 30 of them were only allowed to compete, the others did not come up to grade, and thirty varieties competing for the $25 prize, only ten of which were allowed to compete, but it brought out a wonderful show and no doubt something good will come out of it. We had a rousing good time, first to last. They turned out a barrel of Wealthies on the table, and we got $24.50 out of that pile of apples to add to the memorial fund of Peter Gideon, by selling the apples.

Mr. Toole: In regard to this seedling question, I will say, I do not think this Society needs to be awakened on the question, but I do think that our efforts need to be a little more intelligently directed than they have been. We all remember that at Omaha we took the special prize on seedlings, and we feel that we have done a great deal in the past in the way of seedlings, but still we need more concentrated effort in the future, and so I make a motion,

That our President be instructed to appoint a committee of three to confer together and present to the Executive Committee of this Society some plans for more definite action in regard to the seedling question, in regard to offering premiums, or any other action that seems to be fitted to the wants of the Society.

Motion that the President appoint a committee of three to report to the executive committee some plan on the seedling question was put to vote and carried.

REPORT OF DELEGATES TO IOWA HORTICULTURAL SOCIETY.

Mr. Marshall.

The thirty-seventh annual convention of the Iowa State Horticultural Society was held in Des Moines December 9, 10, 11 and 12, 1902. As your delegate I was most heartily received and treated with every courtesy. The session the first day was held jointly with the Iowa Park and Forestry Association and some very interesting papers were read on such subjects as School Gardens, Street Trees and Parking, School Gardens and Forestry in Europe, etc.

The meeting of the Horticultural Society opened with only twenty members present, but this number increased during the session. It is a pleasure to visit a Society in its own home, with its own library and specimens about and pictures on the walls. It adds a dignity to the meetings that we lack. I hope our Society will take this matter up and carry it through. If we can not have a room in the capitol, let us have it in the next best place, but see to it that we have our own quarters before our next annual meeting. They have women in Iowa, because it is a great state and produces able men, but they do not attend the Horticultural Society meetings, and in that respect we are far ahead of them. Another thing one noticed was the absence of young men and one wonders who is to take up and carry on the work the present members have so very ably begun. Their President, Mr. M. J. Wragg, in his annual address, offered an idea that it might be well for our Society to consider. "Landscape Gardening on the State Fair grounds." Think of the added attractiveness in years to come, that a small outlay of money and work in that direction would add to our fair grounds. At the same time why not have it a sort of trail ground and bureau of information, by having each variety of tree and shrub labeled. Here the people from town and country could be reached and when they saw something they wanted to put in their own grounds they could read the label and get the name and see in what parts of the state it thrives.

The Iowa program was much more varied than our has ever been, and to me it was a great relief to learn that Horticulture did not mean exclusively apples and small fruits. There appears to be a great deal of interest in Iowa in the North Western Greening and the growers are satisfied with it as a tree and with its hardiness, but the all important question seems to be as to its fruitfulness, and if I was asked that question once I was asked it a score of times and I am sorry to say I could not answer them. Can you?

The question of dust spraying was brought up and a number of members thought very favorably of it. One member claimed you could spray before breakfast with dust, as many trees as you could in a day with liquid and at less cost for material. This member told of a grower who sold $200.00 worth of Wealthies off two acres, while his neighbor's apples were destroyed by worms. He used a powder spray bellows that cost $1.00. Prof. Price said that it was the consensus of opinion at the apple growers' convention, that liquid spray was superior, but that dust was far better than no spray.

In answer to a question Mr. Patten advised nurserymen to go slow with the use of Prof. Hansen's Siberian Crab as a stock, as he had been experimenting with it. Out of seven varieties that he had tried it on, it proved a failure after four years with all except the Wealthy.

A very interesting paper on fruits in Alaska was read. The most promising of their native fruits were a very large blue berry which ripens in July and August and their currants, which are mottled and much larger than ours.

Fruit crops the past season were only fair, but with the promise of a very good yield the coming year. Nurserymen report the loss of a great deal of young stock and laid it to the cold, damp weather. I found they have had very little blight in Iowa this past season, and that the Yellow Transparent does not blight as badly with them as many other varieties.

Buckwheat was recommended by thin growers as the very best cover crop. Their principal strawberries seem to be Enhance sample, Manwell and Warfield with Clyde for dry places.

Among some of the most interesting papers were: Forestry in Germany, by Prof. Greene of Minnesota; an address by Miss Sabin, Professor of Domestic Economy at Ames; and A Kicker, by Wm. Langham of Cedar Rapids.

Their Society offers very liberal premiums and in consequence had a fine display of some seven hundred plates of fruit, among them being the display which had won the Grand sweepstakes at the Apple Growers' convention in St. Louis against Kansas, Nebraska and Missouri. Their leading varieties seem to be Ben Davis, Gano, Johnathan and Mekle though I saw the finest plates of McMahan and N. W. Greening that I have ever seen.

REPORT OF DELEGATE TO NORTHERN ILLINOIS.

Mr. Edwards: I was a delegate from this Society last year to Champaign, and I did not expect to go as a delegate this year, but Mr. Thompson requested me to come and I finally consented, but I told him I could not stop but a short time; I got there at one o'clock and stayed until half past three and they had a splendid meeting there in northern Illinois; they certainly had the largest attendance of any horticultural meeting I ever attended, and you can credit this to their president, Mr. Thompson, I think. He took charge of the Society when it was all run down, and built it up, and he secured a good attendance and had a program that commanded people's attention. I gave them a paper on apples for northern Illinois and southern Wisconsin, and I want to tell you that they treated me first rate and they tried to treat others the same. They had a splendid display of fruit on their tables. I hope that this Society can take some of the measures that Mr. Thompson took to get the general public interested in the state meetings; he certainly did credit to himself and to northern Illinois. The meeting was held at Sterling and that is one of the nice towns of northern Illinois, or in Illinois, in fact, and it is a splendid agricultural country; it is a better fruit country, in my opinion, than the low level land of northern Illinois. They certainly can do much more in northern Illinois with raising fruit for themselves than they are now.

REPORT OF DELEGATE TO ILLINOIS MEETING AT CHAMPAIGN.

Prof. F. Cranefield.

On December 17th, 18th and 19th I attended the annual meeting of the Illinois State Horticultural Society at Champaign. I have as a result, a store of pleasant recollections. They are kindly people down there and strive to make as one of their number, the stranger within their gates. I found a society with a membership about double that of our own and every one very much in earnest. One point was very clear: every one gives freely of his experience and knowledge, for the benefit of the others. There seemed to be an entire absence of narrow and selfish views and a determination to "get and give."

As the office of delegate was wholly new to me, I fear that I did not wholly grasp the possibilities of the situation and may have fallen short in many of my duties. I did not, for instance, participate freely in discussions, for which I was duly reproved later by members who claimed to be pleased with the telling of things I *pretended* to know. Aside from this, which is to me no cause for regret, the visit proved instructive.

I noted a few points which I thought might prove of interest. I learned that Illinois ranks high as an apple state. The statistics regarding the number of barrels of apples produced last year were so staggering to my apple-weak intellect that I became confused and forgot the figures, but they represented more apples than I had ever dreamed of. I regret to say, however, that these apples were mostly of the Ben Davis variety. It is wholly unsafe in southern or central Illinois, to say that there is any other apple than the Ben Davis worthy of culture.

Spraying is a live subject with them and a large part of their program was devoted to work in spraying. I should judge that insect pests are much more troublesome than in our own state. The San Jose scale appears to have gained a considerable foothold in many sections of the state.

Prof. Forbes states that the scale is easier to control than the Codling Moth. He recommends the lime and sulfur wash known otherwise as the California wash, to be used when the trees are dormant.

Seven months after treatment but 3-100 of one per cent of scales were found alive on trees treated with the California wash.

Prof. Lloyd gave interesting results of experiments for the control of the second brood of Codling Moth. In addition to the three regular sprayings in spring, with Paris green and Bordeaux, trees were sprayed three times in July and August, with the object of controlling the second brood. The yield of marketable fruit was increased from 42 to 82 per cent by such spraying.

Arsenate of lead seemed to give better results than Paris green. The question of pure Paris green seems to be a serious one with the orchardist. Very numerous complaints were heard regarding its adulteration. Small packages seem to be pure while large packages, as barrel lots seem to be generally adulterated.

A very excellent fruit display comprised about 400 plates of apples besides an extensive exhibit of potatoes and other vegetables. The banquet on Thursday evening was an enjoyable feature and one worthy to be considered by our own society.

California wash for San Jose scale:
30 lbs. unslaked lime.
15 lbs. sulfur.
15 lbs. salt.

Slake the lime in five gallons of boiling water and add the sulfur when lime is slaking and boil together one hour, adding water it necessary. Add salt and dilute to fifty gallons.

San Jose scale and Forbes scale live over winter in insect form. Scurfy louse and oyster shell bark louse winter as eggs.

Mr. Edwards: There is one thing that I ought to have mentioned in my report, and that was, that the Northern Society paid all my expenses from my home down there an back again. I ough to have included that in my report; I want them to have that credit.

REPORT FROM NORTHEASTERN IOWA SOCIETY.

W. J. Moyle.

The eighteenth annual meeting of the Northeastern Iowa Horticultural Society was held at Nora Springs, Tuesday, Wednesday and Thursday, December 16, 17 and 18, 1902, and it being my pleasure to attend the same acting in the capacity of delegate from our state Society.

When I received the program and noted the place of meeting, the first thing I thought of was that at Nora Springs I would have an opportunity to get acquainted with the veteran horticulturist, Edson Gaylord, and have an opportunity to view with my own eyes the work of this veteran pioneer in horticulture, and it gives me pleasure to state that I found the old gentleman had thoroughly demonstrated the practicability of theories of top grafting with many very fine specimen trees in his orchard.

Upon arriving at Nora Springs it was with considerable pleasure I found that our old horticulturist war horse, A. J. Philips, was already on the ground. He immediately took me under his wing and I soon found my self well acquainted with the horticulturists of northeastern Iowa with my headquarters established in one of the many fine homes of which Nora Springs abounds.

Apples seemed to be the main thing under consideration throughout the entire session. Varieties on exhibition were similar to those grown in our state, but somewhat inferior in general appearance and size. Sunscald seemed to be the great drawback to the successful growing of the apple. Melinda was held up and lauded to the skies as a variety that was remarkably free and exempt from this trouble. Our Iowa people were quite enthusiastic over the N. W. Greening and Windsor.

The general opinion arrived at was that if trees were properly top grafted on hardy stocks, viz.: Hibernal and Virginia Crab, most of the good varieties could be successfully grown throughout the district.

REPORT FROM MICHIGAN SOCIETY.

Mr. Irving Smith: It was my pleasure to be sent to attend the meeting of the Michigan Society at Hart, Michigan, in Oceana county. We went by way of steamer across from Milwaukee to Grand Haven, and from there to Ludington was the most forlorn, God-forsaken country that I ever went through. After we passed Ludington the country began to improve, we began to see a little oak timber coming up, the second growth, on the rather undulating land, and the soil began to look a little better, and when we got up to Hart we were in what looked like a pretty fine country. The meeting was held in the opera house there, the attendance being not as large as at our own meetings. The Society there is not as large as ours, but very enthusiastic, particularly the leaders among them impressed me strongly and they treated all their delegates with the utmost cordiality.

Mr. Caleb Davis gave us a little sketch of their fruit growing history in Oceana county; that is in the midst of the peach growing country. He said that the growers until about 1885 grew in a very limited way and sold to practically a home market. At that time they began to set more largely, particularly of peaches. They seemed to think that anybody that had a few peach trees had a fortune that he was going to get very soon; well, they did not all of them get it. As the peach industry advanced, prices of course went down, and it was reduced to the ordinary business proposition of supply and demand. Mr. Brassington, who led in the discussion, gave us a description of his own methods, which I think were very good for his kind of a market, which is a distant market. He said he sent his fruit all to one party, this happened to be a Milwaukee party, and he made it a point to be acquainted with that man, to go over and see him at various times not only in the shipping season, but at other times. He made shipments of from one to five cars daily, and by so doing keeping up a continual supply of this particular brand of fruit, so that this dealer in Milwaukee could get a trade on this particular brand of fruit; he knew what he could expect, and he found much more satisfactory results than selling in a general way to whoever happened to give the best bid for that particular lot.

Then we had a very good paper by C. B. Cook, of Owosso, who said that as we are servants of the public, let us make our fruit as cheap as we can. He advocated the double hedge row, by which he meant setting two rows of plants pretty nearly together, and allowing but few runners to form and then and now a matted row. In general cultivation he had very much the same plan as we have here, but there was one point, that of winter protection, that was got at in quite a different way. He found the sowing of barley or oats broadcast on his strawberry bed, on his old bed soon after the crop was off, and on a new bed after the plants were pretty well grown, of value in protecting the plants if they were inclined to go too far in the fall. There was an exhibition of strawberries there; this was the first week of December, and there were strawberries in fruit there on exhibition, I believe the variety was Enhance, very fine berries. The varieties of strawberries there seem to be pretty nearly what we have here, as given by Mr. Kellogg, the great strawberry man there. He put in the Warfield, Senator Dunlap, Sample, Seaford and Arama, as among the most prominent for commercial growing.

Prof. Herrick, of the Experimental Station, gave us quite a long talk on apples, the varieties and variation by selection, and showed, apparently to his satisfaction, though I must say, not to the satisfaction of the audience, that the locality in which fruit is grown very often changes the appearance, almost the type, of the fruit.

Then we had a talk by Prof. M. D. Wait, U. S. Pathologist, on nurse crops and cover crops. This I thought was a very valuable paper, and one that we might all get good points from. His experience extended over a large section of the country, both in the south and in the north. He defined nurse crops and cover crops in this way, the nurse crop being a crop which is planted in the orchard for the profit of the crop itself, and the cover crop for the benefit of the orchard. He said that corn was one of the most common nurse crops to plant in an orchard, and it was a very undesirable crop to plant, except in a very small, very young orchard; it was too heavy and took more soil than the trees could profitably spare, but it was a very good indicator as to the real strength of the soil itself, something we all need to know. As to nurse crops, he recommended truck crops, as we commonly speak of hay crops and potatoes, particularly in the south they raise immense quantities of sweet potatoes in the orchard with very desirable results. The common grains, oats, rye and barley, should never be planted in the orchard, as they take too much of the moisture from the ground and consequently starve the trees. He recommended as cover crops, cow-peas, vetch, soy beans, crimson clover, in fact, all nitrogen gatherers, and cautioned against too late plowing in the spring.

When the matter of spraying came up, there were some very remarkable exhibits of apples shown as the result of the work of spraying; among them was a northern spy they had taken from the show tables, which was so bright in color as to attract very general attention.

Mr. Horace G. Welsh, the commissioner who was appointed to look after the peach orchards, and destroy, where necessary, diseased trees, gave us a talk on the diseases of peaches. I must say that while he recommended some remedies, that the summing up of it was a good deal like the summing up of the remedies for the hog cholera; after you read a few pages of remedies to give your hogs when they get the cholera, they usually end up by saying that the best thing is to kill all the hogs and bury them good and deep. That was about the result of the work in the matter, not of prevention, but curing trees when they became diseased was to chop them down and dig them out, root and branch, and burn them.

We all know that celery is a large industry in Michigan. We had a little talk on that, showing the growth of the business and the wonderful extent to which it had gone, and the possibility of still greater work. I can say from our own experience that the celery markets are not overdone, there is room for a great deal more celery than is now grown. The Kalamazoo people get about ten cents a dozen for their celery, the growers, that is, and claim that it is profitable at that figure.

The paper delivered by your delegate was on Intensive Cultivation and the Bank Account. It was very well received, and in two or three points I wish we could copy the Michigan Society, that is, in not putting down or setting a certain number of minutes for a paper. I suggested this to the Secretary, and whether it was on account of that, or something else, I notice that he has made our program in that way. The form of the program which I hold in my hand is quite an attractive little booklet giving just a little sketch of the speakers who were expected. This was sent, I judge by the heading, to the various persons, with the request that they print as much as they had room for in their paper as an advance advertisement, and it struck me as a very good way to advertise our meetings. My expenses were entirely paid by the Michigan Society.

Mr. Gibbs: I have a very short statistical report in regard to these societies which I should like to offer for the record.

On motion of Mr. Barnes, the reports of the various delegates were accepted.

GROWING VEGETABLES.

John Vanloon.

While the subject of market gardening is one of great moment and the business of growing vegetables is one that engages the attention of a large number of men, women and children throughout the country, still we believe the subject of home gardening is one that affects more people and can frequently be discussed with profit. It is hardly probable that I can give the members and friends of our Society any information in relation to the subject which they do not already possess. Gentle reminders or personal experience sometimes prove a source of information, and it is from this standpoint that this paper has been written and if some of those present may gain some thoughts or hints worth knowing I shall feel well repaid. During an experience of thirty-five years in market gardening, a great change has taken place and the knowledge gained during that time has confirmed us in the belief that to grow vegetables successfully and profitably we should aim to have a well enriched soil, kept clean by the best known ways, and provided with an abundance of Humus. In fact every effort should be made to add constantly what humus we can in order to obtain paying results, and to defy droughts which occur to a greater or less extent almost annually. An additional item and perhaps the most important of all, is the sowing of the best seeds and plants obtainable. Shun poor or doubtful seeds—burn them or throw them away. It's a waste of time to bother with them. If you are already fortunate enough to deal with a reliable seedsman, stick to him and pay him or them such prices as are asked. The majority of good seedsmen will ask no more than they are worth. I will not name any particular varieties as it will take up too much time to do so, but if you want good results in that line for both home use and market, sow standard varieties for the main crop and try new kinds sparingly. While gardening is steadily on the increase, yet it is a deplorable fact that many farmers have little or no garden, and by the means deprive themselves of a privilege that should be taken advantage of by every one. Nothing is more healthful or more easily produced for the use of the family than a good supply of garden vegetables of all kinds. Thus it is that nearly the entire living of the family can be secured from such a garden for several months in the year, and that living is the most healthful and palatable of anything that can be furnished, especially when fruits are added. We would not advise farmers who are not within easy reach of a good market or canning establishment to attempt to raise much more than enough for their own use because, in a great many places the business is overdone and prices are kept at a low figure. This, coupled with the prevailing scarcity of help, materially interferes with the looked for success when carried on on a large scale. Another cause that makes the growing of vegetables for market less remunerative than formerly is the competition with southern products of nearly all kinds with perhaps the single exception of nutmeg melons when raised under glass in this part of the northwest. When properly attended to, these can be raised so as to have them ready for market from two to three weeks earlier than without glass, and will yield an income of from one to two hundred dollars per acre. Melons raised in this way can be sold off in time to afford a chance for raising a second crop, which, in our case, always consists of turnips which ordinarily pay a handsome additional profit. The ground having been kept clean requires no further cultivation and if your soil is not too poor and the seed is put in at the proper time you can raise a crop that is worth having for feeding purposes, for market or for supplying a large amount of humus. Right here I wish to call your special attention to the crop just named and to one other that is proving to be an unexpected aid in enriching our sandy soils. It is the cowpea and is a southern product, but through the writings of several of our most noted agricultural writers such as Prof. Massey of the Practical Farmer, Collingwood of the Rural New Yorker and several of our Experiment Station workers is gradually working its way northward. Quite a few private individuals are raising some of them every year in our own state with varied success, while my own experience which extends over a period of twenty years has led me to the conclusion that as soon as the farmers on light soils will give the proper care to the growing of cow peas it need not be long before their millfeed bills can be reduced considerably and so not only save a part of the outlay of the money that now finds its way to the pockets of those who handle bran, shorts and brewers' grains but at the same time enrich their soils.

The production of this crop, however, is of so important a nature that it requires a paper by itself to get fully acquainted with its possibilities, and in order to keep within bounds I will confine myself to the growing of turnips for the purpose of enriching the soil. The reasons for advocating the growing of turnips on an unlimited scale are that to our knowledge there is not a crop grown that furnishes so cheaply, abundantly and in so short a time so large a quantity of humus for succeeding crops. While we sell large quantities of them, they are always sown as a humus crop and often turn out to be a money crop by disposing of them in the market. We find this so satisfactory that on our small farm consisting of about thirty acres, every available acre in the late summer or fall is sown to turnips of different varieties and sometimes scarlet clover seed is mixed with it. It sometimes occurs that an unexpectedly large crop is raised where none is looked for; for instance, the past fall, owing to an early and very destructive frost which occurred in our vicinity, hundreds of acres of corn were almost entirely destroyed. Other crops such as late beans, tomatoes, and vines of all descriptions suffered likewise. In our own case ten acres of cow peas and soy beans were killed outright. The sowing of this entire field to turnips in time and long before the killing frost occurred produced a truly wonderful crop. The result we look for next year. This field with its heavy crop of cow pea vines supplemented with several tons of decayed turnips per acre, will not only make an ideal field for growing vegetables but will grow a large crop of any kind at a comparatively small outlay for enriching the soil. The course we have pursued in growing something besides weeds on the soil has been a source of a great deal of satisfaction in maintaining soil fertility and is one of the secrets of raising good vegetables.

In conclusion we would say that in our opinion the best results are obtained by plowing rather deep, subsoiling heavy soils, making the soil rich, not planting a larger crop than you can well care for, planting the best seeds obtainable and supplying the soil with plenty of humus.

DISCUSSION.

Mr. Van Loon: Here are two samples of what are known as "Cow Horn" turnips. These are grown on sandy soil, some of them grow considerably longer, and the form and shape they grow in has perhaps given them the name. We grow this for a humus crop. These turnips were left in the ground, and in the spring of the year the ground was honeycombed and filled with the humus of these turnips, and the consequence was that the succeeding crop was a very good one.

Mr. Chappel: Do you feed these to the cattle?

Mr. Van Loon: Yes, they can be, if you wish to.

Mr. Landwear: I would like to ask Mr. Van Loon if this land in which he sowed the turnips in the fall would need plowing in the spring, and if the turnips would be a benefit to any and all crops?

Mr. Van Loon: Yes, I think so, and I think there is perhaps no better soil for the purpose of following this up than the tobacco fields. These crops are taken off at a time that they might well grow another crop, especially a turnip crop, or perhaps even cow peas.

Mr. Nicolai: I would like to ask a question in regard to planting muskmelons out in the open field early in the spring, as the gentleman suggested, if there is not danger, in case we have a week of cloudy, cold weather, with cold rain, as we often have in the spring, if that will not produce a total failure in that method?

Mr. Van Loon: Well, of course we have to contend with that in a measure, but, as I said before, in planting these I do not advocate planting them too early; we have got so now that by doing this for years we know pretty nearly when the soil is just about right for planting the seeds. When it has attained the right heat, then it is all right to go ahead, don't wait for anything, whether it is cloudy or shiny, put in your seeds and box them up. The least bit of sunlight will strike these glasses and will immediately form a vapor right on these lights and it is amazing what heat is produced. By this means you gather the sun heat right into the soil which you do not get if you do not work it at that time of the year.

Mr. Nicolai: When I first commenced gardening, some 26 or 27 years ago, that was my first experiment, and I discarded it for this reason, that for two years in succession I started my melons as you said, warmed up the soil for them, and we had these cold rains that we are liable to have in the month of May, and the ground we all know will chill through, with three or four days of cloudy and rainy weather, no matter how warm we may have had it previous to that time, and the consequence was that the melon plants got chilled and turned yellow and never recovered from that chill. Now I would prefer the method we have followed, of starting our melons on sod, or potting them, and when we are sure, about the last of May or fore part of June, transfer them to the field with these sods; if we get a good start I have known them to bud and blossom and they never seem to be disturbed if they are transferred on nice, mellow, moist soil. I would like to hear from Mr. Utter in regard to that; I think he has raised melons quite extensively.

Mr. Utter: Both methods are practiced in the neighborhood where I reside; each method is advocated, according to which method is being used, but both are being used successfully. My method is by planting in inverted sods on a fresh made bed. This hot bed is formed by using very coarse manure and making up a bed about a foot deep, six feet wide, and mine are sixty feet long, using envelope sods, and placing the sods on this fresh hot bed as soon as the bed is made, make it one day and the next day place the sods on it. I get the sods about 11 inches wide and 17 inches long, four sods fitting cross-wise of the bed, and after they are placed in the bed, then I make that bed perfectly level, if possible, and then take a hay knife and cut the sods so as to make six pieces of each one of these sods. This method is practiced by some by just getting an individual sod for each hill, but the sods cannot be put in as evenly, and in cutting these sods I use a 10-inch plank, and, using a hay-knife, cut at the edge of that plank, just to make the piece very even, and it can be put in so evenly that it seems all one solid piece of sod, just the same as in sodding lawns. We cut these pieces into six hills, which makes about 1,500 hills to a hot bed 6 feet wide and 60 feet long. We use a butcher knife in slashing the ground and making the holes about an inch deep, planting the seeds about an inch deep in each of these sods, using the garden rake for smoothing the bed, and sifting a little fine soil full of humus on top; but not more than a quarter of an inch deep, for if that sub-soil is deeper than that, they root on top of the sod and will not go further.

A Member: At what time of the year?

Mr. Utter: We make this hot bed about the last day of April or first of May. The seed will grow in four days if the conditions are right. Plant about five seeds to the hill, and when every second or third lives, thin to three and gradually harden them off. Just as soon as they start the third and fourth leaf, we change in the heat of the day from glass to cloth sash, and as the season advances, using the cloth entirely, gradually hardening them off, and after about five or six weeks, put them in the field.

The Member: How large are they then?

Mr. Utter: Very often they begin to run, sometimes show a blossom and they are perfectly hardy. To make a stronger and better growth we use an application of nitrate of soda, a very weak solution when the fourth or fifth leaf is started; in 24 hours we note a change in the color and texture of the leaf, the leaf is harder and the texture is harder; we find this of great advantage. We have our ground fitted as early in the season as possible, plow and harrow it, get a dust mulch and have the ground in as moist a condition as possible, using a disc harrow in fitting the ground, and we make a hole just the shape of the sod, using a hoe so that the bottom will be flat, and transplant these with very little change; it is seldom they wilt. One great advantage is that we overcome the danger of having several plantings, and the stink bug then does not attack them to any great extent, for the reason that the vine is hard at that time. We have three or four plants in one hill.

Mr. Barnes here introduced resolution regarding premiums which, after discussion, was referred to the Committee on Resolutions.

BLIGHT.

Prof. F. Cranefield.

The disease common to apple and pear trees, known as blight or fire blight, so destructive throughout the north central portion of the United States last summer, has been well known to horticulturists for nearly one hundred years. It is therefore not a new disease. It has been observed during this time that the disease appears as an epidemic at irregular intervals. It was once thought that the outbreaks were periodic, in five, ten or twenty year periods, but a study of the literature of the subject does not afford proof of this theory. Quite often a year in which the disease is destructive is preceded by a year in which but little blight was noticed. Usually epidemics are followed by one or more seasons of comparative freedom from blight. According to the history then, of blight, we should suffer but little next year from this disease.

In searching for the cause of the disease, numerous theories have been advanced. There are many who firmly believe that blight is caused by severe freezing the previous winter. This is the "frozen sap" theory. It will be difficult to account for blight on the Pacific coast under this theory or even in our own state last year, as the winter of 1901–2 was a very mild one. There is really nothing to support this theory. We were told at our meeting last summer that blight is caused by electricity; that it always appears immediately after an electric storm. Probably the only foundation for this supposition lies in the fact that the effects of blight are sometimes more apparent immediately after a storm. It seems strange that apple and pear trees alone of all our fruits should be so affected by electricity!

There is not the slightest evidence to uphold this theory.

Sour sap has been cited as a cause. Surplus of sap, causing apoplexy, has also been mentioned. Appendicitis and locomotor ataxia seem to have been overlooked as possible causes!

In 1878 Prof. T. J. Burrill of Illinois, advanced the hypothesis that blight was caused by certain bacteria, which were always found in blighted tissues. This supposition was confirmed by subsequent experiments by different investigators.

Prof. J. C. Arthur has demonstrated by repeated experiments, the presence of a specific form of bacteria which is always associated with blight. This particular form has been isolated and afterward transferred to healthy tissue, causing blight. Various other forms of plant bacteria derived from rotting tomatoes, etc., were introduced into the tissues of pears without causing blight; pure cultures were obtained by the transference of the bacteria from one portion of sterile medium suited to their growth, to another and so on through several cultures until the last contained only the bacteria and poisonous compounds, such as are commonly formed by the action of bacteria upon vegetable substances. Pear trees inoculated with this pure culture, blighted, proving that it is the bacteria and not other associated substances, that causes the disease. The milky, sticky substance always associated with blight has been strained through porous earthenware which effectually separates bacteria from the associated juices and inoculations made with both the filtered and the unfiltered portions: From the former no blight resulted while from the latter blight was invariably produced.

These are the facts adduced by scientists as proof that bacteria are the direct cause of blight. I think it may be positively stated, without fear of successful contradiction, that blight is a contagious bacterial disease, capable of being transferred from one tree to another. A simple experiment which may be performed by any one, will afford evidence in support of the theory.

Wound the terminal bud of a rapidly growing pear shoot with a knife which has recently been in contact with blighted tissues and a fine case of blight will follow. I did this repeatedly last summer. By this crude method, I inoculated pear trees with virus from apple trees and vice versa. Pruning shears, if contaminated, might also serve to transfer blight. There are two forms of blight: blossom blight and twig blight. The former attacks the blossoms, destroying them and often the fruit spurs, but seldom extends to the main branches. The latter, most common in Wisconsin last year, attacks the young, rapidly elongating shoots.

In the pear, the disease extends to the larger shoots and occasionally to the main branches and trunk. In the apple, the injury rarely extends into two year old wood. It progresses most rapidly during the season of most rapid growth, ceasing largely when growth ceases. At this time a distinct line of demarcation is visible, defining sharply the extent of the injury. All below this limit is healthy tissue. The progress of the disease may be checked at any time, by severing the blighted branch, cutting at least a foot below the point of injury. The germ of pear blight will withstand freezing but quickly perishes by drying. There is then but little danger of the disease being disseminated by the wind as the germs will have perished when dry enough to be blown about. Blight virus when active is always a sticky, viscid substance. How then is it carried over winter? By a few persistent, slow-growing cases known as "hold over" blight in which the disease persists throughout the fall and winter. In the spring the bark is ruptured, the viscid mass exudes and is visited by bees and other insects and carried by them directly to the blossoms of the apple and pear.

The nectaries of these blossoms afford an ideal breeding ground for the bacteria and we forthwith have an extended case of blossom blight. This is not theory but a demonstrated fact. Mr. Waite of Washington captured bees that had visited blighted blossoms and found the germs of pear blight in their mouths. The honey bee is not the only culprit as other honey or pollen gathering insects would prove equally mischievous. I have as yet, found no one ready to explain the mode of infection in twig blight and I have asked a great many people. This then is the history of the disease.

There remains for discussion the conditions that favor it and methods of treatment. It is quite generally agreed that rapidly growing trees are more apt to be attacked by blight than slower growing ones. In general terms, conditions conductive to rapid growth in the apple and pear are conductive to blight. Heavy manuring and cultivation both induce a rapid growth and the new rapidly growing tissues are the first attacked. Old bearing trees growing in sod land rarely suffer from twig blight. There is but little new growth on such trees.

A circular letter was sent to many fruit men in Wisconsin last year from the Station, requesting answers to numerous questions, among them this one:

"Is the blight more destructive to the trees that are cultivated or to those on sod land?"

Ninety- eight per cent of those who answered, stated that the trees on cultivated land suffered most. There seems to be but little if any difference in susceptibility of the different varieties to blight. I am aware that this statement will be challenged by many who are present as indeed I hope it will be. I am always willing to accept any testimony and am open to conviction. It is generally stated that the Yellow Transparent is a "blighter" while the N. W. Greening is comparatively free. Is it not true that the former grows more rapidly than the latter, thus exposing succulent tissues to infection? I have found many Transparent trees free from blight when growing in sod while one of the worst cases of blight observed last year was on N. W. Greening. When you ask for reports on the extent of blight as affecting different varieties, most conflicting answers are sure to be received. According to my present limited knowledge, I doubt if any variety of apple at least is more subject to blight than any other. Neither have I been able to learn that any variety is immune. The same is probably true of pears.

The extent and virulence of the disease is considerably affected by weather conditions. Blight is apt to be more destructive during a wet season than in a drier one for the reason that growth proceeds more rapidly when the trees are abundantly supplied with moisture, producing tissues susceptible to infection. For the same reason trees which are heavily manured are more likely to blight than those on poorer land. In brief, any condition that induces rapid growth, affords conditions favorable to the blight bacteria.

Remedies: This end of the subject is of the most interest to fruit growers and unfortunately with our present knowledge of the disease, the one that can be presented with the least satisfaction. However, it is generally agreed that spraying is of no value in checking blight. The organism that causes the disease works wholly within the bark in twig blight at least and is therefore beyond the reach of sprays. If we treat our orchards so as to induce an excessive growth, we lay the trees open to attack by blight, while if only a normal growth occurs, they are less likely to be attacked. We can certainly check the disease in any case by cutting out the blighted twigs in summer, if cut back one or two feet beyond the visible point of injury. The most valuable work consists in cutting out every blighted twig late in the fall in order to remove any possible cases of "hold-over'" blight.

Less blight with one exception, was observed in the Station orchard last summer, than in any other orchard visited. The blighted twigs cut from several hundred trees might easily have been carried away by one man at one load. There is but one reason that I can assign for this, viz.: that the orchard has been carefully pruned for blight every year and the blighted twigs destroyed.

DISCUSSION.

Mr. Utter: It seems to me we cannot get very much knowledge in discussing this question about the blight of the apple-tree; we know that the blight on apple trees is insignificant as compared to the blight on small fruits, and perhaps we might get some information from the Professor on the blight on strawberries and tomatoes.

Prof. Cranefield: In answer to that I would say that the term "blight" is a common one among horticulturists; almost any disease which affects a plant may be called a blight, but I attempted to discuss only the specific form that attacks apples and pears. I did not give the technical name, I am not sure that I can give you the name, but it does not interest you very much. There is a specific bacterial disease that attacks the pears and apples, there are other diseases that attack the strawberry; they may or may not be bacterial diseases that attack them, but so far as we know, the apple or pear blight never attacks strawberries, or tomatoes, or plants of that nature, it does attack the mountain ash and fruits that are allied to the apple and pear, it is found on the hawthorn.

Mr. Toole: I would like to ask the Professor if there is any possibility of our getting any closer knowledge of the hold-over places? Would it be possible, if we locate these hold-over places, to paint over or spray over these places and do something to stop their spreading from that?

Prof. Cranefield: The simplest plan is to cut them out; cut down far enough so as to cut them all out; it often extends deeper on the pear than it does on the apple. I doubt if there is any spray that would be ofany value, because the germ of the disease is beyond the reach of the spraying.

Mr. Green: I would like to ask how long these blight germs will last; how much drying is necessary to kill them?

Prof. Cranefield: I do not know that that has been accurately determined. It has been determined in general terms that a comparatively short period is sufficient to kill them. I have not any notes at hand, or any facts which will show that, but, for instance, where a brush pile of dry twigs has been exposed to the sunlight, it is doubtful whether any infection will arise from those twigs.

Mr. Green: I want to ask whether it is recommended to burn those twigs? I think it is practically not necessary to do that. Cut the twig off and throw it on the ground for a short time, and the germ will soon be dead and it is not necessary to carry the twigs away and burn them.

Mr. Marshall: I should think in Mr. Green's way of handling the twigs, cutting them off and throwing them on the ground, the insects could work on them on the ground just as well as they could in the tree. I should think it would be very much better to destroy them, get them out of the way.

Prof. Sandsten: I recommend burning them, for the reason that Mr. Marshall said. If you cut off the green twig, sap will exude, and insects are bound to come and they are apt to distribute disease. In regard to the bacteria, it is a microscopic, one-celled organism that does not alter its form either winter or summer, so that there would practically be no difference between the winter and summer condition.

WEDNESDAY AFTERNOON SESSION.

REPORTS FROM LOCAL SOCIETIES.

Lake Mills, Wis., Feb. 2, 1903.

I beg leave to report that the Lake Mills Horticultural Society is still living. Our last exhibit meeting was held in June when there was an exhibit of 40 varieties made, most of them very fine. There were also exhibits of berries by youth who had been offered cash premiums for the best showing of single berries grown from plants of spring setting, and cultivated by the children themselves. The contest created much interest among them in growing berries. The plants were furnished them free by Mr. Geo. J. Kellogg, 600 in all with instructions for cultivating them. There were 8 cash prizes given.

Mr. Geo. J. Kellogg is our chosen delegate to the State Horticultural Society convention now in session.

Respectfully,
F. E. Parsons,
Secretary.

REPORT OF THE OMRO HORTICULTURAL SOCIETY FOR THE YEAR 1902.

Mr. Fries, of Omro, read the following report:

Omro, Wis., Jan. 9, 1903.

The year 1902 has been a very encouraging one for the Omro Horticultural Society. We have held our regular meetings the second Friday evening of each month throughout the year, also three socials and a chrysanthemum show and fair which was a grand success, and we feel as a Society justly proud of it. Our membership is 78 with a large attendance at the meetings. Our annual meeting was January 9, 1903. We elected the following officers: President, W. J. Jenkins; Vice-President, H. E. Hart; Secretary, Mrs. Jos. D. Treleven; Treasurer, Mrs. Mamie Stead; Executive Committee, Geo. Buck, C. Oak, Mrs. W. P. Bussey and Mrs. R. T. Darrow; A. B. Frees was elected Delegate to the State Meeting.

The Omro Society extends a cordial invitation for the Summer State Feeting to be held at Omro the coming summer.

Mrs. Jos. D. Treleven, Sec.

REPORT OF THE ALGOMA HORTICULTURAL SOCIETY.

Mr. Payton, of Algoma, read the following:

Our Society can report a flourishing condition. The membership at present is over 60 and interest is increasing which promises a larger membership. The Society holds its meetings on the first Tuesday of each month. A special effort is made to interest the children and young people in the meetings. We held two very successful flower exhibits the past year and are planning for greater things next year.

Our annual election was held the 17th of January, and the following officers elected: President, H. C. Christensen; Vice-President, J. B. Noyes; Secretary, Mrs. C. J. Howlett; Treasurer, Mrs. J. J. Ihrig; Delegate to Madison, A. J. Peyton.

Mr. Abbott, of Appleton, made the following report:

Mr. Abbott: I will report that we are still on earth at Grand Chute, and we hold regular meetings every year at the homes of members of the Society; we do not have a regular place for holding meetings. The officers elected this year were: Mr. Wallace, President; Mrs. Finkel, Secretary, and Mr. J. P. Buck, Treasurer.

EUREKA SOCIETY.

Dr. Loope: We have regular meetings the first Saturday of each month and generally have a good social time and also discuss many subjects of interest to horticulturists. They had a very fine chrysanthemum show and also a good summer aster show. We have in the neighborhood of 60 to 80 members, and a very fair attendance. While most of those who attend the state meetings are men, I will say that in our section the majority are women who attend and keep up the Society; I do not know but what the State Society should be made up of women; I think we would have something more done; not but what you do well, but that is the idea with many of those local societies, that women do all the work.

Mr. Philips: Our Society has been running for eighteen years, and we have done just like the Eureka and Omro people; we have had sense enough to put the ladies on, and when the ladies undertake to do anything, they always do it. We started a Horticultural Society, but we could not get up interest enough, so we reorganized and made it an agricultural, horticultural and dairy association, and that took in pretty nearly everybody, and we have always our meetings in the winter, and the audiences always fill the houses, and it has improved the young people in that neighborhood so that they went to the fairs last fall and took all the prizes. The young people are put on the programs, and they take hold and I think it is a good thing for them and they learn to speak in public and it is a great benefit to them.

GREEN BAY.

Mr. Smith: I did not come prepared to make any report. Our Society there, I was going to say has degenerated—perhaps that is the best word—into nothing but a Society for holding fairs; they do not pretend to do anything else but simply hold a county fair, and it is a debated question whether they will continue that. The fair is described as a big horse race with a very small agricultural tail.

PRESCOTT.

Mr. Gibbs: We have a very good Horticultural Society in this county, which devotes a reasonable share of its premium money to horticulture. So far as I know there is only one Horticultural Society in our county, and it is organized on the old-fashioned Indian plan; there are no officers, there are no dues; it meets whenever there seems to be any occasion for it; in the summer time it meets as a lawn party. In the fall and winter we meet at either one of the churches or in a public school building, and then always in connection with the high school and divide up the program with the high school, and in that way secure a much larger attendance. What we have accomplished is this,—we have got out of sight all the old, ill-looking fences on our principal streets; we have improved the lawns; we have taken the cows and pigs off the public streets and put them where they belonged; we have driven the race club out of town, and we are rapidly growing a sentiment among our people that the man who permits his dogs to go over the fence and annoy his neighbor is a public nuisance who should be abated-personally.

On motion of Mr. Marshall, Prof. Irwin, of Iowa, was made annual honorary member.

WAUPACA SOCIETY.

Mrs. Barnes: We have quite a flourishing, live Society in Waupaca, with about 30 families as members. If the head of the family pays 25 cents a year to the Society, it includes the whole family, and we have quite a few honorary members; our musicians we always make honorary members of the Society, thus including many of the young people whose parents are not members. Our meetings are subject to the call of the President and Secretary. We have no particular time of meeeting. We have held two meetings since last June. The people at large seem to be quite interested in us, as we often have from 250 to 300 people at the meetings. Our meetings are held at the homes of members, and occasionally at a hall or in a hotel.

PLANT BREEDING.

Discussion led by A. T. Irwin.

Mr. Edwards: I would like to ask Mr. Irwin about the selection of scions from a bearing tree. Now you take a good bearing tree that you consider much better than taking scions from other stock which you do not know about, the same variety. With livestock, we give it a certain care, certain feed, and we bring them up to a standard of excellence, and we can judge a tree on something of the same basis we do livestock, by bringing up, feeding it to a certain standard of perfection.

Mr. Irwin: If you take scions from the tree of a Jonathan apple, you do not have any hesitancy at all in saying to the buyer that you know he is getting a Jonathan apple. Now go a step beyond; if you take those scions from a poor bearing tree of the Jonathan variety, you do not have any more hesitancy in saying that he is getting a tree of the Jonathan variety, but trees of a poor bearing tree, and if he plants the tree in poor soil and gives poor culture, the trees from good stock are likely to become poor bearing trees.

Mr. Tippin: The discussion of this question, in my judgment, is more far reaching than many of us have anticipated, and while I do not wish to take issue with the young gentleman at all who has addressed you,—we cannot afford to do that, he is a Missouri boy, and we have claimed the credit of making him what he is, and we are proud of him, I want to say that to you. But this question as it is being presented to the public mind is encompassed with a great deal of danger, and that is the point that I want to bring out, and I shall speak from the experience of a propagator for twenty years.

I agree with the theory of the possibility of improving plants by selection, in the propagation of trees as well as any other plants. While I agree with that theory, I also believe that it is not practicable to the extent that the public mind is going to be led to believe it is. For instance, knowing the demand upon trees for the quantity of scions necessary to contribute the graft that is planted every year if they had to be cut from bearing trees that bore fruit the season before they were to be cut, it would be an impossibility.

In the second place, I would not go over my own orchard and cut scions off my bearing trees that had borne that year, because if they had borne a crop they have only made sufficient new growth at the end of the limbs to carry them through the next season. Neither would you, Mr. President, as an orchardist, permit me to do it if I were to come to your orchard.

Again, if in the selection of my scions to start my trees out of which I expect to make my scion orchards, I select my scions from the healthy bearing young trees, grow my trees and transplant them into my scion orchard, where I can cultivate them and grow them thrifty every year, and gather my scions from them I will certainly perpetuate the fruit. So much for that phase of it.

Now to the second phase of this question. Your Vice President asked a very pertinent question a while ago, and I want to say to you, as my candid judgment, that variation in varieties of trees is 90 per cent due to the variation of the soil and climatic conditions under which they are planted. For instance, the Ben Davis in my country, planted in the southeast of Missouri, in the iron district it takes on a very high color, almost black, while in the Ozark region, where I live, it takes on a high colored stripe, as you see on the plate, while in Lawrence and Henry counties it does not take on a bright color, it is small and it is insipid. Those trees may be taken from the identical tree and planted in these different localities and you will have that difference. You might go to the nursery wherever you elect to and buy your trees and select the very best, and plant them out, and if you plant it where the conditions are not congenial to its growth, they are not going to meet your expectations.

The third phase, and one more dangerous than either of these I have referred to. I will take the liberty, if the Wisconsin Society will stand behind me in doing it, to use an apple that has been sent here, as an illustration of the point I am about to make. If this Society were to pass a resolution today endorsing the proposition of the selection of scions from bearing trees, and favor the purchasing of only such trees from nurserymen, I will guarantee to you that before the fall of 1904 there would be letters patent issued on that process, and tree agents and tree salesmen would be scouring your country offering you trees and only trees that were made from scions selected from the very best type of each variety, and he would sell you more trees of that class than the man that was occupying conservative ground and tried to do what he thought was best, the best for you and the best for himself.

Prof. Sandsten: I can hardly agree with the gentleman that preceded me. While I will not advocate any straight rules or laws in regard to the propagation of nursery stock from bearing trees, we know, and I know from personal experience as a nursery inspector in one of the eastern states, where they have as much as 65 big nurseries, that generally nurserymen take the scions from the nursery row, and not only that, but it was shown in one of the southeastern states where the nurseryman did not know himself where those scions were cut, but men that could not tell one variety from the other do actually make the scion cuttings. I do not wish to cast any reflection upon our nurserymen, because I know from experience and reputation that they do not do such work, but there is no question that the selection of scions direct from bearing trees must have a beneficial effect upon the fruiting qualities of the grafts made from them. No matter what arguments we advance, it stands to reason that we must expect something better propagated from something better, because you know what you are propagating from.

Now, the gentleman just preceding me said that he could not get scions enough from that year's wood if the fruit trees fruited. Why not take them from last season's tree that fruited last season, because apples do not fruit every season. I am not advocating passing a resolution, but I am defending the general idea, and it is getting to be recognized in the East, in New York State they are strongly in favor of some law or some restriction in regard to propagation of apples and pears and plums from bearing trees.

Mr. Toole: In looking at the fruit at Omaha I was much interested in the quality of peaches, and a man in charge from Rocky Run took great pride in some varieties that originated there, and this man was very positive in this statement that he knew in regard to the peaches that he had made improvements that were apparent by making selections and grafting from special trees.

Mr. G. J. Kellogg: I was going to speak on this question of scions from bearing trees, but the gentleman previously speaking has answered it. Some people cannot get scions enough for commercial purposes in the nursery from bearing trees; that is a fact, nurserymen can not get them. I have been cutting scions this winter for top grafting next spring from several varieties, and there are not enough scions on them but just for one cut, for one top graft. Now where are the nurserymen going to get scions from orchard trees to graft 100,000? It cannot be done. I believe that the scion from the bearing tree will produce better fruit and more quickly by two or three years than the scions from the nursery tree, but how are you going to get around that point?

Mr. Tippin: I would like to correct an impression that I might leave in reference to my remarks. I do not advocate cutting scions in the nursery row, but from the scion orchard.

Mr. Reasoner: I would like to ask Prof. Irwin, Mr. Tippin, or any others, if you have not observed different types of the same variety of apple in the same orchard? I think Senator Dunlap has in his orchard at least three types of Ben Davis; I know of one orchard where there are two distinct types, and other orchards where other varieties have different, distinct types. Now I want to ask these gentlemen whether they have anything of that kind in the same orchard?

Prof. Irwin: Yes, I know I have, and I am pretty sure you all have, and the whole idea I had in view was, first of all, that these types do appear, and the point I wanted to emphasize was, that we should watch out for this and select the best ones.

Prof. Sandsten: I think that an explanation is called for on my side, that is in regard to scion orchards. Now there are some nurserymen that have scion orchards, and it is a capital idea to have it. But I want to impress you with one single fact, and that is, by using it for a scion producer, and not for the production of fruit, you defeat one object, you get the tree into the habit of producing wood, and that habit is apt to be propagated and extended. Not only that, but when you cut back a tree for scions you will force out new wood, and you cannot cut that wood for scions, that wood, as you know, is inferior for fruit production. You do not want to lose sight of that fact, because the tree is as apt to form a habit as a man.

Prof. Cranefield: It seems to me that if the theory is right, there must be a way to get the scions; if those are the best kind of scions to have, let us have them, there certainly is a way out of it.

Mr. Tippin: I would like to call the gentleman's attention to the fact that if he takes his bearing tree and cuts it back to make wood next year, and follows that process, he produces a scion bearing tree out of it.

Mr. Green: One more word along this line. In my opinion we should go back a little farther than the scion. I tried an experiment some years ago. We had a number of trees, the scions being taken from one tree and put on our common stock, that is, the so-called mixed apple stock, and from that we had four trees that I put out in the orchard and they were all different. Now, why were they different? The scions were taken from the same tree, but the stocks were different. Now, to go back a little further, we want to grow our seed especially from one tree and one variety and keep providing a seed orchard to get our stock from to work our scions on. I think that is a point we want to look at; we are taking too much mixed seed and using it, and the stock we work our scions on has an influence on the scions and of course in that way deteriorates. Now we want to raise a seedling orchard to get seed from our stocks, and when we get to that then our scions will work better.

Mr. Periam: I think that plant breeders may as well first as last take lessons from the breeders of our domestic animals. Now it has taken over two hundred years to bring the Short Horn cattle to what they call perfection, there is no such thing as perfection, but it is as near perfection as we can get, and yet the the average short horn is full of imperfection. In other words, when we arrive at the very top of the hill, it is more difficult to keep that animal or that class of animals at that point, than it is to bring them all the way up the line for 100 or 200 years. The same maxim will work exactly in plant breeding. We are going over, really, the same ground that I, as a young man, went over nearly sixty years ago, in breeding up plants in a humble kind of way. We never can get beyond the brow of the hill; the moment we get to the top we go down, you must either come up or go down.

Mr. Tippin: There is no difference of opinion as to the advisability of selection at all, as I understand it, it is simply the question of selection as far as practicable that we differ on, we all believe in selecting fruit. I would like to ask a question, following the suggestion of Mr. Green, whether any of you have grafted a sweet apple on the top of a sour apple tree, or, I will even go further, did you ever graft one on the top of a seedling sour apple tree, they are also very sour.

Mr. Green: No, sir, I have not.

Mr. Tippin: Well, I would suggest that some of you try that.

Mr. Irwin: Our friend Tippin comes from Missouri, and he does not have to take into consideration the matter of hardiness of stock as we do; down there almost everything grows, he does not realize what this thing means to us. I do not agree with him altogether in this matter of experiments for hardier stocks. We have tried a little of everything we could get our hands on. We have grafted sweet apples onto crabs, onto the wild prairie crab and onto the cherry crab, some of the Transcendent and all sorts of crabs, and even grafted them onto the hawthorn, and I do not want to give out the impression that if he had grafted the Ben Davis apple on a wild prairie crab, that he would not get Ben Davis fruit at all; there is no such change. On the other hand, I do make the assertion that the quality of fruit, especially the variety, would not equal the variety of some good stock.

Mr. Gibbs: I have grafted the Walbridge on the Hyslop and reduced its size one-half and increased its color two-fold.

Mr. Green: Of course, I concede, if you graft Ben Davis, you get Ben Davis, but there is nevertheless an influence.

PLUM CULTURE.

Prof. Cranefield.

It has been my pleasure many times in the past, to tell you of the advantages to be derived from growing native plums. I am not less enthusiastic on the subject than in the past, in fact each succeeding year serves but to convince me more firmly of the superior advantage of this fruit, both for the home orchard and for market, and I am quite certain that if I were to change my occupation, it would be to engage in the culture of native plums. It is notable in the popular discussions relating to plums, that the questions of varieties, culture, marketing, etc., are oftener mentioned than the diseases, insects and other drawbacks. I find in fact, that very many people believe that the natives are not only iron-clad, but also immune from disease and insect attack. This is a serious error and the prospective planter must understand that there are difficulties to be met as well as in the culture of other fruits. The main difficulty the past two years has been to get nursery stock. The great awakening in recent years to the possibilities in this line of orcharding, found but few nurserymen prepared. Conditions are better now and it is probable that stock may be had this season in any reasonable quantities.

In the propagation of the natives, many difficulties have been encountered. Root-grafting is but rarely successful; crown-grafting on one year seedlings is better, but expensive. Top-working on two year seedlings is all right for the amateur but impracticable where a large number of trees is wanted. The relief probably lies in Fall budding on stocks of the current season's growth.

The next difficulty encountered, after the trees have been planted a year, is the matter of pruning. Nearly all of the natives are of straggling habit and strong growers and if allowed to go unchecked, produce bad forks that commonly break down as the head becomes developed. On the other hand if we practice repeated cutting back, a compact, dense head is formed, which necessitates staking the tree in early life and hinders the development of fruit spurs as the tree develops.

While I am not prepared to give definite directions for pruning, I am inclined to believe that a compromise of the two methods would prove best. I would prune a two year tree to a whip when setting in the orchard and head back severely. A little judicious summer pruning the first year, will aid in forming the head. The following spring the longest shoots may be shortened somewhat; this to be followed by a careful summer pruning. After this it is probable that as little pruning as possible should be done. There is a very wide difference in the habits of the different varieties, requiring a close study of their peculiarities. Trees of the Surprise and Hammer will often make straight and shapely specimens without pruning after the first year, while Rockford and Quaker remain straggling and forked in spite of the best efforts.

As the trees begin to bear, insect enemies appear to share the crop. The most serious of these are the curculio and the gouger. Both belong to the family of snout beetles and are small, grayish insects that puncture the fruits, depositing eggs therein. The affected plums either drop before maturity or are unsalable if they mature.

The curculio is most active when the plums are from one-sixth to one-fourth grown. It is rarely that plums are stung during the first two weeks after the blossoms fall. The curculio is invariably on hand for the earliest varieties and continues operations from three to six weeks depending upon the season. For this reason the early varieties are sure to be attacked, while the very late ones rarely suffer. Aside from this there is probably no variety immune from attack. My observations in an orchard of over three hundred varieties leads me to view with great doubt the statement that any variety is "curculio proof."

After reaching maturity in the fallen fruit, the insects seek shelter in the ground or in trash about the tree and remain in a state of hibernation until the following year.

The preventive measures then lie in clean culture and the prompt destruction of infested fruit. It has been observed in the Station orchard that curculio are less troublesome in the cultivated portions of the orchard than where the trees are growing in sod; less in sod than where heavy mulch is applied. Spraying is of doubtful practical value in combating this pest. The class of insects known as beetles eat but little after reaching maturity and the curculio is no exception. Several specimens kept in a breeding cage in the Horticultural building last summer, survived nearly three weeks without food. The most practical method of control is by jarring, a practice that has been so fully described heretofore that mention is not necessary here.

All that has been said of the curculio, applies to the gouger as their habits are mainly alike. Gouger-infested plums rarely fall before maturity. There are other insects affecting the plum but they are of minor importance.

When all the difficulties mentioned have been surmounted and the fruit seems well on the way to maturity, other troubles may present themselves. On certain trees the fruit may begin to swell abnormally and assume a spongy texture, soon becoming absolutely worthless; the fruit spurs and even larger branches may become similarly affected.

This is caused by a fungous disease commonly called "plum pockets" or "bladder plums." The disease is apt to reappear from year to year on affected trees as well as to spread to other trees. There is no efficient remedy known. The prompt destruction of affected trees is recommended.

In the Station orchard we have had but little of this disease nor has it followed the course described in books. It does not appear every year in affected trees, neither has it spread. As the season advances the leaves of many trees may appear as if punctured with fine shot. Innumerable brown spots at first appear and these diseased areas later drop out, leaving round holes with smooth edges. The affected leaves are unable to perform their normal functions and usually drop, frequently causing complete defoliation. This is another fungous disease but happily one that may be almost wholly prevented by timely spraying with bordeaux.

As the plums begin to take on color, the hopes of the brave plum grower who has fought and won so far, begin to rise and he sees visions of well-filled baskets of luscious fruit, but he may yet be doomed to disappointment if the spores of Monilia fructigena or "brown rot" are loitering about his orchard. This destructive fungus is the most provoking as well as the most destructive of plum diseases. It usually affects the ripening fruit, causing it to decay rapidly while still on the tree. The skins of the affected fruits are covered with grayish postules or spore masses which serve to perpetuate the disease.

The spores may gain entrance very early in the season, lodging in the bud scales early in spring and as the buds open find a congenial field in the growing tissues where they usually exist through the summer, finding their favorite feeding ground in the ripening fruit.

Occasionally, however, it does not wait so long but if the weather conditions are favorable, attacks the blossoms, causing them to decay and may thus wholly prevent the setting of fruit.

This disastrous state of affairs occurred quite generally in many parts of Wisconsin last spring, especially in the Station orchards, causing a loss of at least 90 per cent of the crop. Moist, warm weather favors the progress of the disease and that we had in abundance at blossoming time last year.

It is probable that this disease may be largely if not wholly controlled by spraying. The first spraying should be done very early in the spring, before the buds open and at this time a strong copper sulfate solution may be used. At the close of the blossoming season a thorough application of Bordeaux should be given, and again later in the season if any suspicion exists that the evil has not been overcome.

Where the plums hang on the tree so thickly as to touch, they are apt to rot, as the moisture which collects at the points of contact produces a softening of the tissues which affords an opportunity for the germs to enter. It is advisable then to thin the fruit severely before ripening time.

This somewhat terrifying array of the enemies of the native plum may cause misgivings in the minds of some as to the future success of the fruit, but no true-blue friend of the natives will halt or falter in his determination to succeed with this splendid fruit. The faint hearted ones may drop out of the race, leaving the field to the genuine "plum-cranks" whom nothing can daunt, who will "jam" the curculio, make "jelly" of the gouger, "can" the fungi liberally in Bordeaux and carefully "preserve" the dollars that are sure to be their portion.

The President: I suppose we might group those two topics.

On motion of Mr. Buehler, Mr. R. C. Whitcomb was made an annual honorary member.

THE AMERICAN PLUM IN WISCONSIN.

S. H. Marshall.

Some seven years ago, while attending the short course at our university, Prof. Goff, in the course of one of his lectures on horticulture, said, "I believe there is more money and more improvement to be made today in this state with the American plum than with any other fruit."

This statement brought plum culture to my mind and the more I studied it, the more convinced I become that he was right. Consequently when I bought a farm some six years ago I set out an acre of plums, and have increased it until I now have some eight acres, which is I believe the largest plum orchard in our state.

Commercial plum growing in Wisconsin is as yet an experiment; there are no bearing orchards of any size. But there are orchardists and nursery men who have enough trees to show us how they will bear and how long they may be made to live. I have marked the fruit in a small way for three years, and this paper is made up of my own experience and a study of theirs.

In considering the planting of a commercial plum orchard, the first thing is the market. Can a satisfactory market be found? For without a market no matter how fine and plentiful the crop may be the venture will be a failure.

If near enough to a market for strawberries I believe you can sell at a good profit all the plums you can raise, the demand will increase with the supply.

My home market is a city of some twenty thousand people, and they now use more plums than any other sixty thousand in the state. Their taste has been educated by our experiment station, which has been selling them plums for some years. This past season two of our grocers took all my crop (some three hundred baskets) as it came, and paid me forty cents a basket, or over two dollars a bushel. These same merchants would have been glad to have had as many more. This has been an exceptional season, not because other fruit was scarce, but because times are good.

That price, however, can be cut in two and still leave a handsome profit. It has always been my intention to put my plums up in neat baskets, and in each basket to have a printed booklet of receipts for using plums, but as yet I have not found this booklet necessary.

There are many varieties and they vary so under different environments, that it is impossible to say which are the best for any given locality.

As an example Mr. O. M. Lord of Minnesota told me that the Rolling stone was one of the finest plums he grew and showed me samples that were very choice (and I have seen them grown in other places since, where they were large and of fine quality), but in my orchard they are small and poor.

I got my trees direct from Mr. Lord himself, but I understand the soil of his orchard is more or less sandy, while mine is a clay loam.

The following are a few of the varieties that do well with us, and some of their good and bad traits:

Aitken. Season very early, first to fifteenth of August. Fruit large, of fair quality and very thin skinned, but so soft it is difficult to market when the curculio leave any salable fruit on the trees. Tree is fairly good shape and productive.

Cheney. A week or ten days later than the Aitken and no way superior to it. A poor bearer and very subject to the curculio.

Diana. Later than Cheney. Fruit large and good. Tree is a vigorous grower, but spreads too much. Fruit is badly infected with the curculio.

Forest Garden. Ripens Aug. 25th. Fruit of medium size and good quality. A fair shipper. Tree a vigorous grower and heavy bearer, but too spreading.

Rockford. About the same as Forest Garden and a good plum to grow and market with it.

Quaker. Season Aug. 25th. Fruit of the best, large, good, flavor and color and a good shipper. Tree a vigorous grower, of good shape and a productive bearer.

Nellie Blanch. Aug. 25th. Fruit large size, fair quality, a good color; stone large and skin thick. Tree thrifty and shapely.

De Soto. Season Sept. 1st. Fruit fair in quality, but small in size and a bad color, and skin thick. Tree is a good grower and a heavy bearer, but subject to ripe rot.

Hawkeye Season. Sept. 1st. Fruit very large. Ships well, but is of poor quality and rather off in color. Tree vigorous and of good shape, but subject to ripe rot.

Wyant. Season Sept. 1st. Fruit medium large of very good flavor, good shipper, but rather poor as to color. Tree a compact grower and heavy bearer, but branches inclined to curve towards the ground.

Surprise. That word expresses my sensation when in the fall of 1898 Prof. Greene showed me an eight year old tree of this variety in fruit. Season Sept. 1st. Fruit of the largest, best quality, finest flavor, color fine, skin medium and stone small. Tree the most vigorous and shapely of all the varieties in my orchard.

Brittlewood No. 2 or United States. Season Sept. 1st. Fruit of the largest and best flavor, but a trifle coarse. Color very good. Tree is a good bearer and vigorous grower of fair shape. I consider this and Surprise two of the very best.

Hammer. Season Sept. 5th. Fruit large, very good quality and firm. Color good. One of the best shippers. Tree very vigorous and shapely, but a rather light bearer (not so expensive to thin out the fruit as with some of the other varieties).

Ocheeda. Season Sept. 5th. Fruit fair quality, size and color. Tree a good bearer, but not very vigorous or shapely.

Maquoketa. Sept. 15th. Fruit and tree fair, but principally valuable for its lateness in fruiting.

In describing the above varieties, I have tried to confine myself to points only, that will be of value to the commercial grower, and give the descriptions from my own knowledge, as I have seen the fruit and trees. That they do not coincide with some of the best authorities I am well aware.

While I do not expect to go into detail of the planting and care of the orchard, a few ideas and methods that we practice may open a discussion that will prove of value.

In setting out the orchard put the trees 18 feet part each way, as twelve or even 15 feet apart, brings them too close for convenience in cultivating and spraying. Twenty or twenty-five feet would be better, were it not for the fact that this would take up too much room.

It is better to plant out few varieties, for fifteen or twenty baskets of the same kind show up better than that number composed of several sizes and shades. Do not set the trees in blocks, each variety by itself, but mix them so that one kind may pollinate another. Begin cultivation as soon as the trees are set out and keep at it, as a good gardener would with his garden. Do not go deep, and never plow in the spring, unless it is positively necessary, as this either throws the earth up on the roots of the tree or away from them.

I find a disk harrow, an acme orchard harrow and one of the numerous weeders very useful tools. Clean cultivation does more to destroy insects than spraying or catching them and is not half so expensive. It makes the plant food available and conserves moisture, as could be seen in the dry summer of 1901 when good cultivation gave better results than mulching or irrigation.

I cannot speak forcibly enough on this subject. It does not cost much to keep a dust blanket on your orchard in an ordinary season, and the expense will be paid several times over in the thrift of your trees and the quality of your crop. Whether or no spraying kills the curculio? is a question, but I am positive clean cultivation does. Along about the 20th of August we find it necessary to plant a cover crop, and for this I would recommend either oats or rape. I prefer the oats as it is easier to disk under in the spring.

The curculio is the worst insect pest the plum grower has to deal with and the only one I intend to mention. Spray for it with an arsenite (such as Bowkers Disperene) for perhaps it feeds before depositing its young, but I doubt it. Jarring the trees and catching the insects is the most effective way of destroying them, and is nearly as good one time of the day as another, except, perhaps, during the noon hours.

It seems, the dropping from the tree, or playing possum is the beetles means of defense, and it will do it whenever frightened. A better remedy than spraying or jarring is the planting of medium and late varieties.

From the various fungus diseases that attack the plum, we suffer most from ripe rot. This can be partly if not entirely overcome by using Bordeaux Mixture. More than half the battle is won by spraying early in the spring, while the trees are dormant, with a very strong solution, say six pounds each of blue vitriol and lime to fifty gallons of water. This method is recommended by Waugh and I have practiced it for two years with good results. This year the rot appeared on the fruit buds and twigs of the plums of my neighbors and destroyed nearly all their crop, while my orchard was not affected to any extent.

It is quite important to thin out the fruit for it keeps the trees from overbearing and improves the size at least 25 per cent. For this purpose, I prefer young girls to do the work, and they are instructed where practicable to take off those plums that are stung and to destroy the fruit when picked. It cost me this past season about five cents a tree.

The most serious problem that confronts the plum grower of Wisconsin today is pruning. How and when to prune? I hope to have these questions answered at this meeting, for I have some several hundred young trees to shape this coming spring. I head them low and the next season cut off all but three or four main branches. The second season there are these three or four main branches, with a growth of from four to eight feet, and each variety with a different shaped head. If the branches are let go they will be loaded with fruit the following season, just ready to bend and break with the first hard wind. Take such varieties as the Rockford, Forest Garden, and Aitken and one-fifth of the trees will be lost.

On the other hand cut the branches back and the next season there will be from two to four branches, of nearly the same length, where the one would have been had it been left alone.

Now, what we are after is to get the fruit closer to the trunk, where it will not have so much leverage. Next season I propose to cut my young trees back to make a proper shaped head, and pinch the new growth during the summer from time to time. This is an experiment and if anyone here has tried it, I would like very much to hear his experience.

Since writing the above, Mr. Hale, the great peach and plum grower of Connecticut and Georgia, has visited my orchard and has proposed the following remedy, which he practices successfully in his orchard. Instead of pinching back in the summer, he allows the shoots to grow until the rapid growth has ceased probably about the 1st of August. Then cut the branches back to a double shoot, being careful to go close enough so that no dormant bud is left above the shoots remaining. This will force the rest of the growth of that branch into the short fruit stems and start new ones below when pruned.

Prof. Goff marketed his plums in ten pound grape baskets, and I have followed his example. They are convenient to handle, both for the orchardist and the consumer. Young girls do the picking and they gather from fifteen to thirty baskets a day, and I pay them fifty cents a day for their work.

Our Society has lost in the past year a man whom we all esteemed and honored, and one who will be better known and appreciated by the works he left behind him, even than he was during his life time. One of the many monuments to Prof. Goff's memory is the young plum orchards that have been planted in the past few years in Wisconsin through his efforts and influence.

DISCUSSION.

Mr. Vaughan: I heartily agree with the remarks made on this subject, and have only a few suggestions to make. Those suggestions are perhaps something in the matter of pruning.

In putting out our young orchard we have in a great measure used root sprouts, in other words, we have obtained our plums on their own roots from the originators themselves, so far as possible. I am aware of the fact that on the heavier clay lands that is not desirable, but on the sandy land it is practically the only way in which we can get many of the varieties of plums to grow at all. I have had them on the native American plum roots,, both grafts and buds and they have almost invariably died, but we have very good results if we can get the root sprouts and get them one year old. Now after setting those, and up to the time that they are two years old from setting, we trim as nearly to the straight whip as we can, after that we let the head spread, much as Mr. Marshall has suggested, trimming back so as to trim in the wood, shorten in the wood, or, in many cases the young plum tree will bear so much toward the end of the long shoots that it will split.

One thing struck me in listening to Mr. Marshall's paper, and that is that the varieties that he recommends as the most desirable on his land are the least desirable on our sandy soil. He speaks in a way not at all encouraging of the De Soto. The De Soto is a fine plum with us. Another thing struck me as very peculiar; he places the Aitken before the Cheney in ripening. Both of those we got from the originators and with us the Cheney is at least one week ahead of the Aitken on the sand with us. I think that without doubt the Rollingstone and a seedling which we have, or rather a wild plum which we have that came from the river bottoms in Kossuth county in Iowa are the most promising plums of over 30 varieties that we have in our orchard.

The seedling, or wild plum that I spoke of is a yellow plum, not bright yellow, the color is rather against it, more of a dull yellow, but a very good quality. It has rather a long pit, and, by the way, the pit is free, it is almost a freestone; it is a fine plum to eat from the hand, and also to can, although probably not superior to many of our American varieties, but we are trying it to see whether we have not obtained in that a thoroughly satisfactory variety for our sandy soil, and I may say, we live in central Wisconsin; it is much colder than it is here; many varieties of plums that seem to do well in our Station here, fail with us entirely, either by reason of the difference in the soil, or difference in the climate.

Mr. Barnes: I think it would be well for me to speak of our friend's point of location. Mr. Vaughan's experimental orchard is in Wisconsin River valley, his orchard is not to exceed 20 feet, I think, above the water level, right in the river bottom, and the climate there in the central northern part of the state is much colder and more severe than it is down here.

Mr. Vaughan: Our plum orchard is on some elevated land, but it is right adjoining the river; you might call it bottom land, but it is not that heavy class of bottom land.

Mr. Barnes: I was so advised; I believe it is not more than 20 feet above the water level?

Mr. Vaughan: Between 25 and 30 feet. It ranges from 8 to 15 feet down to a clay subsoil, and above the clay subsoil we have a gravel, regular glacial drift deposit, gravel and sand and clay; everything else higher than that and above that is wash sand.

At the suggestion of Mr. Marshall, a recess was here taken for the purpose of opening one of the barrels of apples.

COVER CROPS.

Prof. Sandsten.

The last fifty years have marked a new epoch in American horticulture. Previous to this time fruit had little commercial importance. The only outlets besides what the family used, were the cider-press and the vinegar barrel. Orchards were planted for the sole purpose of supplying those demands. Cultivation, pruning, fertilizing and spraying were never thought of. The farmer simply planted the trees and relied upon nature to do the rest. If the trees failed to produce fruit no efforts were made to discover the cause. The fruit was simply looked upon as a free gift from nature and all that could be done was to gather in the harvest. But conditions have changed. With the rapid growth of city population, with increased facilities for rapid and safe transportation and with the gradual education of the masses to the value and the numerous uses of fruit, the production has hardly been able to keep a pace with the demand. The old hillside orchards from being merely an auxiliary or side issue to the farm have gradually become the best paying part of it.

From a purely side line to farming, horticulture has developed into a distinct occupation and profession of great magnitude and importance, until to-day we have individual orchards and small fruit plantations containing over 1,000 acres each.

This enormous development and demand for fruit have revolutionized the former methods and practices so far as they existed, and the growing and caring for orchard trees and fruit have been reduced to a science. The old high headed sod orchard with its numerous attendant evils has given away to rational methods of cultivation. From the old forestry method of pruning we have learned to prune for definite ends and ideals—the spray pump has become one of the most important implements in the orchard and no orchardist is up-to-date and successful without having and operating one or more of them. Thinning is one of the later practices and a very important one. We have learned that it is not the weight or number of barrels of fruit taken from a given tree that robs the tree of its vitality but the number of seeds that are allowed to mature. Therefore we aim for larger size and superior quality rather than the same bulk of small and inferior fruit. One of the latest practices in fruit growing is the use of cover crops in the orchard. The practice started in the East and South and grew out of the necessity of improving and restoring the fertility of the soil.

It is essentially a system of green manuring. There are two general classes of plants used for cover crops—namely, legumes or plants which assimilate free nitrogen by the aid of micro-organism, and plants which do not gather nitrogen. To the former class belong the clovers, vetches, cow-peas, and soy beans. To the latter rye, oats, buckwheat and the rape. All cover crops are beneficial in that they add humus or vegetable matter to the soil, thereby improving its physical condition and making it more congenial for the roots of the plants.

Ordinarily our Wisconsin orchards are not in great need of nitrogenous fertilizers. As a rule the wool growth is very abundant and often tòo much so as it tends to produce soft and ill matured wood which is apt to kill back during severe winter, it also tends to lessen the fruit production. Orchards in which the wood growth is abundant, cover crops of rye, oats, rape or buckwheat should be used. It should always be understood that no definite rule for the use and discontinuance of cover crops can be laid down. Each fruit grower must judge for himself since he is the only one who is acquainted with the condition of his soil and trees. General directions and principles may be taught and discussed but the details must be worked out by the grower himself.

Apart from the benefits derived from cover crops by their use to add fertility and as general soil improvers, there is another use which is not sufficiently appreciated by friut growers—namely, as a protection for the soil during the winter. A large share of the root-killing of fruit trees during severe winters could be obviated by the use of a cover crop to protect the soil and to catch the snow so as to prevent the frost from penetrating the soil deeply. Also, it is well known that fruit trees evaporate considerable water during the winter which must be supplied by the root. This supply is cut off if the frost reaches below the depth of the roots and the trees literally dry up. By the use of cover crops this danger is largely prevented. From experiments carried on this winter in university orchards we found that the soil had frozen to the depth of 16 inches where the soil was bare. Where there was cover crop of oats the soil was frozen to the depth of 8 inches, where there was a cover crop of hairy vetch the soil had frozen to the depth of 7½ inches. Where there was a cover crop of rape the soil had frozen to the depth of 15 inches.

The above results show that the hairy vetch and the oats gave the best protection for the soil. The fine showing made by the hairy vetch is due to the fact that the plant forms a low and very dense covering and remains green during the winter. The good showing of the oats is due to the fact that snow was caught and held between the straw. The difference between the rape, blue grass sod and the open field was very slight, the blue grass sod and the rape giving equal protection. All the above mentioned crops were sown August 10th. The same crops were sown just four weeks later in another part of the orchard. The result was not as satisfactory as with those sown early. They did not cover the soil completely or as thickly.

The use of rape as a cover crop has not been sufficiently tried to warrant strong recommendations. It has been reported by good authorities that rape together with other members of the cruciferae family are capable of making available the insoluble phosphates in the soil. This fact alone ought to make rape a valuable cover crop when the orchards are in heavy bearing. Further experiments along this line will undoubtedly demonstrate its value to the orchardists.

The cover crops should be sown in late summer or early autumn, for example cow-peas, soy beans, hairy vetch and crimson clover should be sown from the first to the middle of August. The amount of seed varies somewhat with the land. Hairy vetch ¾ of a bushel to the acre, cow-peas and soy beans about 1½ bushels, crimson clover 10 to 12 lbs. to the acre. Rye, oats, buckwheat and rape should be sown the first week in August. If sown later they will not afford as good protection. The amount of seed should be the same as is commonly sown on the farm. Rape should be sown about the middle of August at the rate of 3 to 5 lbs. to the acre. Dwarf Essex variety has proven the best. The orchard should be cultivated up to the middle or last of July. The active season of growth is then over and the trees should have a chance to mature their wood. The amount of water taken up by the cover crops will not hurt the trees since the trees do not need much at this time of the year.

In selecting a suitable plant for cover crop the fruit grower should be guided by the condition of his orchard and the fertility of the soil. If the soil produce a heavy wood growth, rye, oats or buckwheat should be used as these will not add so much nitrogen to the soil. But if the trees make a poor wood growth it is generally an indication that nitrogen is wanted and leguminous plants should be used.

The greatest drawback against the use of hairy vetch is the costliness of the seed, but seed can be grown successfully in Wisconsin, and with the more general use of the plant as cover crop the seed will become cheaper. The chief advantage of the hairy vetch and the clovers is that they remain green the whole winter and start to grow as soon as the snow is off. Therefore they add a greater amount of succulent matter to the soil. All cover crops should be plowed under as early as possible in the spring so as to give the materials a chance to decay before the summer drought sets in. Afterwards the orchards should be given frequent shallow cultivation throughout the growing season—under no condition should the cover crops be allowed to mature seed and be harvested in a bearing orchard.

DISCUSSION.

Mr. Kellogg: How about rye?

Prof. Sandsten: We have not experimented with rye, but I should think that it would be just about as good as oats, though we have not tried it extensively. I speak only from experiments we have carried on and from what I have seen in other states.

Mr. Marshall: In answer to Mr. Kellogg, I will say that I have tried rye; the objection I had to it was that it is almost impossible to kill it out in the spring.

Mr. Kellogg: We have had some experience with rye in our nursery, and it is as Mr. Marshall said, it is hard to get out in the spring, but if you go at it and get it out, it is the best cover crop there is.

Mr. Barnes: I want to tell you of an experience I had in sowing oats this fall among a block of 45,000 nursery trees. I sowed it the 12th of August and it grew to be 13 inches high and then got ripe and dry, which rye would not have done.

Alongside this nursery was a patch of grass that contained more or less meadow moles. When we got the deep snow early this winter, the meadow moles went into the dry oats and began to gnaw my trees. We hunted these mice with collie shepherd dogs, but we found it necessary to get out a stone boat, load it heavily and drag it through between the trees, in order to kill the mice.

Prof. Sandsten: Of course there is a difference between the use of cover crops for nurserymen and for orchardists. I would not advise the nurserymen to use any nurse crop except crops that they can make immediate use of, because the nurseryman wants the trees to grow well in the row, he wants large trees, and a cover crop like rye and oats will certainly check the growth of your trees and will be injurious. I know of a large nursery in the east that practices a method of using crimson clover. He sows the crimson clover between the rows of apples, plums, cherries and pears, by cultivating, and then after the crimson clover is up about 5 or 6 inches the same fall, he plows it under, and he keeps his trees growing much later in the fall and he produces larger trees.

Mr. Barnes: That is what we have got to guard against, growing large trees the first and second year. We have to ripen up our wood early the first year, that is the reason I sowed the oats.

Mr. Menn: I would like to know how long it would be best to continue cultivating an Illinois orchard.

Prof. Sandsten: That is a question I am not capable of answering. No man can tell another how long to cultivate an orchard; you have to judge for yourself. If the trees are making too much wood, growing too rapidly, stop your cultivating. You can check the wood growth by stopping cultivation, by seeding the orchard down, or by several methods.

Mr. Utter: After the apple begins to bear, how long would you then cultivate?

Prof. Sandsten: I should keep on cultivating as long as the trees will stand it, but I would take pains not to over-stimulate the tree. I should, apart from using a cover crop of clover or cow peas, I should use some fertilizer containing potash and phosphoric acid, so as to give it a plant fertilizer.

Mr. Anderson: In regard to the idea of cover crops for orchards, my experience is very slight, as I am not cultivating a very large orchard, nothing more than my garden. I usually plant my garden to potatoes and corn, and in about three years I will seed half of my garden down to red clover and leave that two years and then plow it under. But on the coming on of winter, instead of sowing a cover crop, I will protect the roots of my trees and the surroundings with a dressing of barnyard manure, and I find it to be a very good thing. I have often wondered whether, instead of sowing cover crops, that time had not better be spent in picking up the fallen apples, instead of leaving them till the spring, which tends to the destruction of the new fruit. Is there anything in that? Are you horticultural people particular enough about destroying fallen fruit and keeping your orchard clean in that way?

Mr. Barnes: I will say that this past season and for the past three years I have made it a practice to hire whosoever I could get hold of to pick up all the little windfall apples, or those that dropped off from disease, or curculio, or anything else, every fall, just before we begin to harvest apples. I have gathered up probably 100 bushels of those little diseased apples in a season, and I sold them for as high as 11 cents a bushel to people to feed to the hogs for the purpose of getting them destroyed. Of course I would not give them away, but they brought me enough to pay for the picking, and I think it was time and money as well spent as anything I have ever done on the place.

Mr. Menn: I would like to ask Prof. Sandsten if he has ever tried the field pea as a nursery crop?

Prof. Sandsten: I have never tried it; it does not seem to be adapted to a cover crop. They cost a great deal for the seed, and it does not have any matting, it does not spread out to the extent that the vetch or the cow pea would.

Mr. Menn: It will stand more frost.

Prof. Sandsten: It will not stand more frost than the hairy vetch.

Mr. Landweir: I am getting rather confused here. It has been suggested that the best crop to raise in an orchard is a cultivated crop. Now what puzzles me is to tell how to put a cover crop after a cultivated crop.

Prof. Sandsten: There ought to be no confusion on that subject, because we are not growing crops in a bearing orchard now. I do not believe in getting two crops from the land, because you cannot do it, the Lord did not mean us to have two crops, one crop of apples and one crop of grain or corn, so when I refer to cover crops I mean for protection of the bearing orchard, and there must be no other crops in the orchard. It is clean cultivation from spring to the first of August or the middle of July, and at that time the cover crop should be put in for the protection of the wood during the winter and for adding humus and fertilizing element to the soil, but growing crops should be set only in a young or recently planted orchard, and even then I would discourage the practice.

Mr. Chappel: There is no doubt that oats or barley will make a good cover crop when sown in proper time for orchards where there is no crop grown through the summer, but where we cannot do that, if we can get fine sand, and put half a load, or a load, according to the size of the tree, around that tree to mulch it, four or five inches deep, it will receive the rain as it falls and retains it for two months or longer, and will give additional moisture to the tree, and no water escapes by running or drying up. It is the best mulch I ever saw applied.

THURSDAY MORNING SESSION.

CRANBERRY CULTURE.

J. A. Gaynor, Grand Rapids.

At the request of your Secretary, I will speak of conditions favorable to the growing of Cranberries.

Cranberries are found growing in a state of nature in nearly all countries in the Northern Hemisphere, lying between the Arctic Circle and the 40th degree of North Latitude. The conditions that favor the growth of Tamarack, Swamp Spruce and Sphagnun moss. Wherever you set your foot on a wild cranberry vine, you can look around and see, not far in the distance, Sphagnun moss, a Tamarack or a Spruce, and the soil upon which it is found growing is almost invariably a black muck or peat that is the product of vegetation that decayed under water. The vegetable species that contributes most to make the soil on which the cranberry grows, is Sphagnun moss,—the same moss that furnished winter food for reindeer along the line of the Arctic Circle.

In the southern half of the belt above indicated, the cranberry vine Sphagnum moss, Tamarack and Spruce, are found growing only on low, flat, swampy or marsh lands, while along the Arctic Circle these forms of vegetation, especially near the sea coast, may be found growing on the hill tops. The reason for this difference need not be given to those who have studied, "The Battle of the Forests," or who understand the fierce warfare that is waged by every form of vegetable life for possession of the earth.

The Tamarack tree lives in the cold swamp and is able to maintain there a precarious existence against the encrouching accumulation of moss that excludes from its roots the warmth of the hottest summer sun, not because it thrives best under those conditions, but because there are a very few trees that are able to compete with it under such undesirable conditions. The Tamarack would thrive well on the hill side if its competitors for that place could be kept away, and if its great enemy, the forest fire, could be excluded; but on account of its thin gummy bark, it perishes before a light forest fire that coud be successfully resisted by the thick, corky bark of the white pine.

The same is probably true of the cranberry vine. It is found in a state of nature only where its roots and lowest runners are protected by water, during that part of the year when fires most prevail. If not so protected, a single fire would cause its destruction. Cranberries have been grown with great success in Massachusetts, New Jersey and Wisconsin upon clean white sand. This is a great change of soil from black muck,—about as great as one could well conceive, and it leads one to suspect that the origin or chemical composition of the soil upon which cranberries may be grown has very little to do with the successful growing of this plant; and that it is probable that the mechanical structure of the soil is of the first importance.

On our Wisconsin cranberry marshes the black muck exists on the surface to a depth of from a few inches to ten or twelve feet. The lower layers of the deep muck or peat is of a close waxy texture, and might be properly called, "Gumbo." A cranberry vine planted in this gumbo, is unable to take root, although chemically, it is the same material as the porous, half decayed, vegetable material at the surface in which the vines take root and grow luxuriantly. So it is extremely probable that the mechanical structure of the soil that allows the heat and moisture to penetrate to the root, is far more important than the chemical composition of the soil.

Notwithstanding these facts, it will be best for a novice to be guided in his efforts by what nature indicates, and if he departs from her teachings, it is only an experiment, and to save expense should be on a small scale.

The three great enemies of the cranberry vine are, insects, fire and frosts. The insects that are most damaging to this fruit are the so-called fire worm, which destroys the vine by eating the chloraphyl on the under side of the leaf, causing the leaves to look as if they had been singed by fire; and the fruit worm which looks very much like the apple worm, and attacks this fruit in much the same way. The ravages of these two insects have been quite severe in Massachusetts and New Jersey, and although both exist in Wisconsin, the damage done by them has been much less than in the East.

Fires have been the great destroyers of wild cranberry marshes. The history of cranberry growing from Massachusetts to Wisconsin has been nearly the same. The fruit was at first found growing wild in great quantities. The fires incident to the clearing of the land and drainage of the marshes brought about the almost total destruction of the wild vines. When these destructive fires occurred before the people begun to cultivate the fruit, the cranberry passed out of existence and was soon forgotten. In Wisconsin the forest fires of 1894 and 1895, destroyed more than 95 per cent of the wild vines then existing, and as a rule the cranberry is to be found to-day in this state, only in localities in which people had begun to plant it before these destructive fires occurred. Other native fruits are in the same way fast disappearing.

The cranberry vine like the raspberry and blackberry is not able to endure long the drying effects of a cold winter wind with the thermometer at 20 degrees below zero, hence it must be protected from such exposure either by flooding or by snow.

The vines started to grow in the spring about the 15th of May and the young shoots are very tender and are destroyed by a frost that would kill cucumber vines. If exposed to a frost during the last of May or the month of June, the entire crop for that season is liable to be destroyed. A frost occurring in the fall of the year, between the 20th of August and 10th of September, while not so destructive to the fruit as the spring frost, is liable to take a large part of the crop; and if earlier than August 20th, is liable to destroy the crop for the season following.

Now these three enemies, insects, frost and fire can be readily overcome by the use of water. By judicious flooding, insect pests can be destroyed. The danger of fire can be overcome, and frost can be guarded against. If the vines are not covered with snow during the winter and early spring, they should be flooded and buried under the ice. And the light late spring, and early fall frosts can be guarded against by filling the ditches with water or raising it a little above the surface of the ground when the frost is severe.

It will be seen that from this successful cranberry growing imperatively demands an abundant supply of water, to be at the command of the grower; and unless this is assured, no one should be tempted to embark in the business. I would advise every person who thinks he can furnish the conditions required, and feels tempted to engage in the cultivation of this fruit to start slow. Want of experience, skill and intelligence in this industry, as in many others, has been the cause of many failures. I know of no kind of fruit growing that requires as much scientific skill, and yet has had so little brought to its aid. There is very little literature on the subject, and very little has been done for it by our institutions of learning. Our growers have been left to grope their way blindly, in ignorance approaching closely to superstition. But when the era of Alchemy and Astrology in this industry has past, and a true scientific basis has been reached, the cranberry is destined to rival the apple in its importance, and the time is not far distant when it can be produced for three cents a quart and leave the grower a margin of profit. Hhe Wisconsin Cranberry Growers' Association has saved the cranberry to Wisconsin, it encouraged men to plant out vines after the marshes had been destroyed by fire. Twice a year its members meet and discuss the best methods of cultivation, harvesting and marketing. There are many varieties of this fruit found growing wild, and the Society has established an experiment station at which it tests the merits of every variety it can find, and it has in cultivation more than 100 of these varieties, most of which are now in bearing. I have brought with me, and here submit for your inspection 24 of the varieties grown at the station this year. These fruits are inspected and tested by the Association annually, and the best are marked for propagation and as soon as we have any approved variety in sufficient quantity, we expect to distribute the vines to Wisconsin growers for further propagation.

We hope to do for the wild cranberry what the late Prof. Goff and others have done for the native wild plum.

Prof. Sandsten: Last January, the 13th or 14th, I had the pleasure of listening to the proceedings of the annual meeting of the cranberry growers at Grand Rapids; they are not a large Society, but the do less talking and more work, and they exhibited, I should judge, about 200 varieties of cranberries, and we will do well to follow their footsteps in going to work and getting up material, and I am glad that Judge Gaynor is with us today, and am glad that he has given us a paper on the subject of cranberry growing. The possibility for increase is immense, and something should be doing along that line.

Mr. Gaynor: Instead of making me an honorary member, or conferring on me honors of any kind, I will tell you what you can do here,—you can pass a resolution recommending the Agricultural Department of the State University, or even the present legislature that they do something to help develop what we have in northern Wisconsin. There is there a class of marsh land underlaid by white sand which is of no use except for cranberry growing and very excellent for that purpose and that might be developed into proper land by encouragement, by having the attention of the people called to it. I know of no way of calling the attention of the public to it other than by way of the Department of Agriculture. If you passed a resolution recommending to the attention of the legislature and the state university this special branch of fruit growing in Wisconsin, something that would get them to do something, that would be a great deal better than making an honorary member of me.

TREE DIGGING.

M. S. Kellogg, Janesville, Wis. (read by Mr. G. J. Kellogg).

This subject presupposes two things, first, that you have trees to dig, and second, that you have use for them when dug. Well grown trees in this latitude ought to be from four to seven feet high when three or four years old; to be sure there are many qualifying circumstances which tend to govern the size at digging time, but when old enough for the market, and the age at which trees are dug will depend altogether on the market in which they are to be sold, the block of trees should be free from weeds, grass or other rubbish. This is quite necessary even when the digging is done with a spade and is imperative if the power digger is used. Among the earliest recollections of the writer is that of helping(?) dig trees in the spring in his father's nursery, that is his help was mainly in carrying water to the men and getting in the way as much as possible.

The time to dig. Fall is considered the best time to take trees up as there is usually more time then to devote to the work than in the spring, especially is this true in a commercial nursery. There is also another reason for digging in the fall in the fact that the roots of the tree have time to callous over and are ready to start growing immediately on being set out in the spring. In determining the time to dig the season must govern. Do not think of digging until the wood is properly ripened and the weather has become cold enough to have had at least two killing frosts. The reason for this is in the fact that the leaves ought to be off of the trees when they are dug, if they are not and there has been no frost to loosen the leaf from the twig, when the roots are cut the tendency of the leaf is to cling to the twig and if any length of time elapses before the leaf is removed, either by hand stripping or any other way, many of the leaf stems will adhere to the tree which will detract from the appearance of the stock and reduce the ease in securing purchasers for the same. If trees must be dug before cold weather they must be hand stripped at once.

How to dig. Where only a few trees are to be taken up, the spade propelled by elbow-grease and directed by brains, for it needs brains to use even a spade effectively, will continue to be the method in the future as in the past. In the nursery where many hundreds, and oft times many thousands, of trees are to be dug every year the spade has ceased to be the important tool it was before the invention of the power tree digger. This, as many of you know, is a heavy cumbersome machine with which the roots are cut by a large U shaped blade which is fastened on either side to a beam of iron or wood and to which the motive power is attached. This blade is lowered into the ground and is then run under the row of trees to be taken up. The digger which we are now using has a blade 24 inches across at the top and is 26 inches deep. The beams are of wood about 4 by 6 inches and 7 feet long with the forward ends curving out a little from the row. It runs on four wheels of twelve inches diameter with a tire width of four inches and are made of cast iron. These wheels are attached to the lower ends of heavy wrought iron levers; each set of wheels, that is those on the same side of the machine, are connected so that one lever operates both wheels. These levers, of which there are two one on either side at the rear of the machine, have a range of 28 inches in raising and lowering the blade, so that when going from one place to another the blade may be lifted clear of the ground by about two inches and can then be set down to a depth of 22 or 24 inches into the ground. In digging 3 and 4 year old apple trees 14 to 16 inches is deep enough depending of course on the kind of soil and the depth of the root system. There is a lifter attached to the digger blade which raises the trees up and loosens the soil so they are easily pulled out by hand.

Almost any class of nursery stock can be dug with this machine from one year old apple seedlings up to 10 and 12 foot shade trees, also grapes, currants, red raspberries, blackberries, etc. We have used horses as motive power but where large acreages are to be dug over every year a steam outfit is much better. Six good horses will draw the machine in light work, but eight are better as then there is no getting stuck. Even eight horses cannot run under large shade trees without frequent stops.

There are two reasons why machine dug trees are better than those dug with a spade. First, better for the nurseryman as then he gets them dug and into the cellar in a very short time. Second, better for the planter for then all of the roots are with the tree even those as fine or finer than hair as the soil is so loosened the fibrous roots all stay with the tree. We dug upwards of ten thousand trees with this machine in less than a day's time, and could have done more had our horses and help been more accustomed to running the digger. The blade can be run at any depth but it is next to impossible to change the depth while in motion. After the trees have been run under they can stand for some time, weeks if necessary, before they are taken up. Many nurseries use the digger to root, prune and check growth on stock that would otherwise get too large to handle.

The tree digger is a great machine; great to dig trees and also great to furnish excitement in dull times for the nurseryman and his help.

DISCUSSION.

Mr. Edwards: It is fun to try to run a digger with horses that will not pull together.

Mr. Kellogg: You have got to get a team used to it, in order to pull together.

Mr. Edwards: Well, the trouble with teams is, they will not put their weight against the collar and stay there. We dug a lot of trees this fall with a digger and we got some teams from the street,—Mr. Coe, perhaps, can tell you more about it than I, because he was there more of the time, but we got three teams, and they would get down and pull together. Two teams went under the apple trees all right, very heavy horses, but when we came to elms 10, 12 or 14 feet high, then you have to have power and a whole lot of it and pull together. You cannot dig apple trees and save roots without you have got a digger. The hired hand will not dig deep enough so as to save you the roots, and it is roots the customer wants.

Mr. Tippin: I think the way to solve the matter of power is to send down and get the Missouri mule to do the digging. (Laughter.)

Mr. Kellogg: We sent down and got the Missouri digger. One point on this matter of tree digging I want to refer to, and that is, to see that the leaves are removed from the tree before digging, or even before the diggers run under them.

Mr. Coe: I do not think it is necessary to say anything more on the subject to you of tree digging. We did a great deal of digging, and, as Mr. Edwards says, you cannot do it without a digger and it does take a lot of power. It took four horses to dig apple-trees, but it was heavy work for four horses, although they were teams that were used to heavy pulling. Then we put on six horse teams that had been used to pulling together, and we did the digging in apple-trees very nicely, but when we came to the big elm trees, some two to three or four inches through and 12, 14 to 16 feet high, they did not go very far without resting. Those horses did quite nice work, did it easily, that is, seemingly, they pulled steadily and all together, but if I had a great lot of trees to dig, I would have a steam digger every time, because then you have steady power and can do a little better work.

Mr. Smith: I would like to ask the gentlemen something about the weight of the horses that they used. It makes a great deal of difference whether you have small or large horses.

1,400 pound horses. Mr. Smith woll not call that a heavy team,

Mr. Coe: These were about 2,800 pound teams, that is, but with us there for our ordinary work they are a good, heavy team.

Mr. Wilkins: Is it possible to get power enough in a reasonable way to dig trees in heavy clay, would it not take about 400 horses?

Mr. Coe: I do not think so; I do not think it is very much harder to dig trees in clay soil than in lighter soil.

Mr. Wilkins: Mr. Phoenix tried the tree digger by power, and he simply could not do anything, I do not know what kind of horses he had, but he attributed the whole trouble to the deep, heavy clay soil.

Mr. Kellogg: How deep did he try to run?

Mr. Wilkins: I do not know, but it was digging apple trees, and he had to abandon it. I think it makes a great deal of difference what kind of soil you have; around there where you have gravel and sand, it loosens from around the trees easily.

Mr. Edwards: No, it does not.

Mr. Coe: It was not the kind of sand that is like snow, not by any means. Where our trees were grown we had a pretty good clay subsoil, it is not a drifting sand.

Mr. Wilkins: What I meant by saying that the kind of soil makes a great deal of difference in determining what kind of a

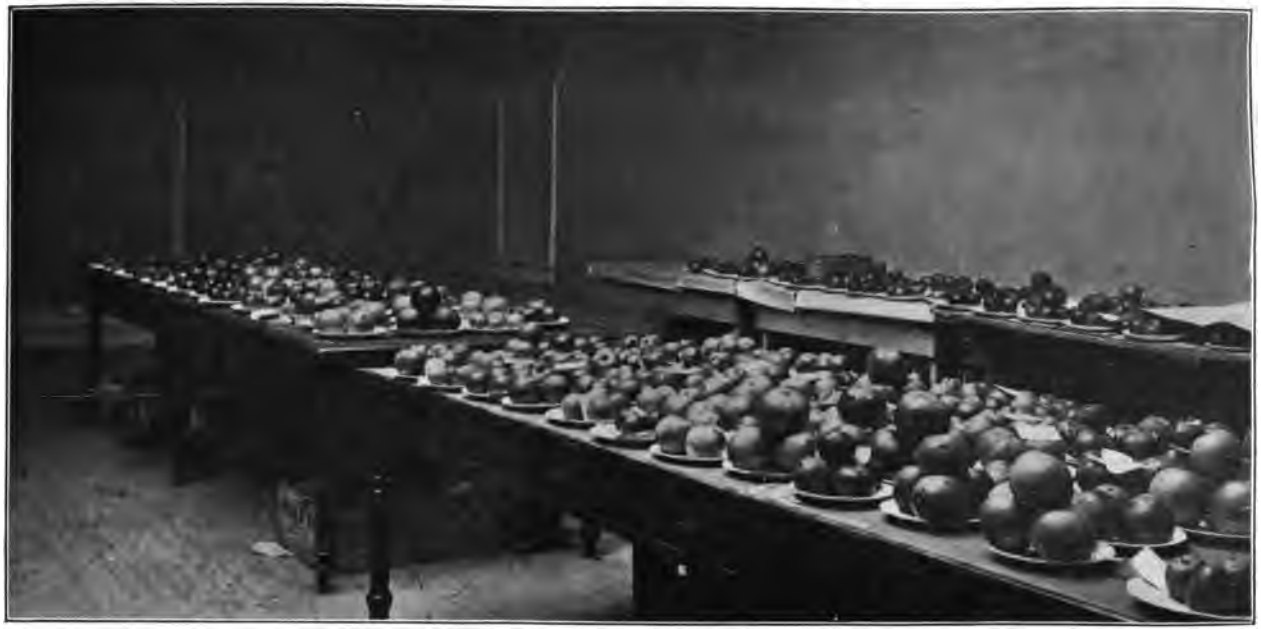

FIG. 2.—A portion of Fruit Display at Winter Meeting, 1903.

digger to use, is this. We have clay so hard, well, a spade is very good, but a pick is better—what will a digger do at 20 inches deep?

Mr. Philips: Your roots will not run so deep, either, in that heavy clay soil.

Mr. Kellogg: You would not have to dig deeper than ten inches.

Mr. Smith: We have never dug trees, but we use a Hoover potato digger, and I will say the gentleman here is entirely right in his idea. We can take one of our, what we call our pony teams, 2,800 pounds, what you use, and dig potatoes all day in a light soil, and sandy soil, with the potato digger, and you put that same digger to the same depth into a hard clay, and four big horses cannot do the work, nor half the work that two small horses will do in sandy soil.

Mr. Coe: There is something of a difference between a tree digger and a potato digger. The potato digger raises the soil right off and breaks it, while the tree digger runs underneath. Of course we all recognize the fact that a tree digger would run harder in a heavy clay soil, but after all, it is the roots that offer the greatest resistance.

REPORT OF JUDGES ON FRUIT.

(Read by Mr. Tippin.)

Single Plates of Apples.

Parsons & Loope, Eureka; 1st—N. W. Greening, Wealthy, Duchess, Fameuse, Scott's Winter. 2d—Wolf River, Longfield.

A. D. Barnes, Waupaca; 1st—Wolf River, Walbridge. 2d—McMahan, Duchess, Ben Davis, Fameuse.

F. H. Chappel, Oregon; 1st—McMahan, Utter, Newells, Longfield. 2d—Wealthy, Walbridge.

A. G. Tuttle, Baraboo; 1st—Ben Davis. 2d—Utter, Newells.

O. J. Philips, West Salem; 2d—N. W. Greening.

Edwin Nye, Appleton; 2d—Scott's Winter.

Best Three Long Keepers.

Parsons & Loope, Eureka; 1st—N. W. Greening, Ben Davis, Willow Twig.

Geo. J. Kellogg, Lake Mills; 2d—Golden Russett, Ben Davis, N. W. Greening.

Best Four Varieties, Hardiness, Quality and Productiveness.

Parsons & Loope, Eureka; 1st—Wealthy, Duchess, N. W. Greening, Utter.

Geo. J. Kellogg, Lake Mills; 2d—N. W. Greening, Golden Russett, Fameuse, Plumb Cider.

Best Three Russians.

A. G. Tuttle, Baraboo; 1st—Romna, Anisim, Boiken.

F. H. Chappel, Oregon; 2d—Repka, Arabska, Cross.

Best Three Crabs.

1st—A. D. Barnes, Waupaca.

2d—Parsons & Loope, Eureka.

Best Single Seedling.

1st—A. J. Philips, West Salem.

2d—F. H. Chappel, Oregon.

Best Collection Seedlings.

1st—Parsons & Loope, Eureka.

2d—F. H. Chappel, Oregon.

Best and Largest Display.

Divided pro-rata.

1—56 plates—Parsons & Loope, Eureka	$2 30
2—37 plates—A. D. Barnes, Waupaca	2 30
3—33 plates—F. H. Chappel, Oregon	2 00
4—21 plates—A. G. Tuttle, Baraboo	1 05
5—21 plates—Geo. J. Kellogg, Lake Mills	1 05
6—14 plates—Edwin Nye, Appleton	70
7—12 plates—A. J. Philips, West Salem	60

In the exhibit of Geo. J. Kellogg we find four plates of pears and among them a variety named President Druards, of good size, shape and quality and if hardy think it would be profitable.

We also find a plate of N. W. Greenings grown in latitude 45 the northern part of the state, which are fine specimens and indicates that this variety will do well further north than this. In this exhibit are two seedlings, No. 1 and No. 2 worthy of mention, especially No. 2. This exhibit is made by Gertrude M. Cairns of Ellsworth.

A box of seedlings from Charles Hirschinger of Baraboo was handed the committee after the awards were made in which we found one seedling worthy of trial. Size above medium, subacid nearing to sweet, and almost red in color.

Geo. T. Tippin,
L. G. Kellogg.

On motion, the report of the committee was adopted.

Mr. Gaynor then offered the following resolution:

Whereas, We are impressed with the great possibilities of the cranberry industry in Wisconsin; be it

Resolved, That we recommend this branch of fruit culture to the attention of the legislature and to the attention of the Agricultural Department of our University for such action as might serve to promote the development of this industry in our state.

Resolution was adopted. (Mr. Edwards in chair.)

President Loope then read the following address:

Officers and Members of Wisconsin State Horticultural Society:—Another year has passed since we met in annual session and it behooves us to again consider past developments and future efforts. The past year has not been without its lessons, its disappointments and successes.

The Society has established another Trial Orchard at Medford and my hope is that we may be able to see our way towards invading other localities in the northern part of our state thus doing our part of the pioneer work necessary in opening and developing an untried domain. This mission of our Society I believe to be of vast importance to the welfare of our commonwealth. It is a work no other organization is prepared to meet. It is a work that individual effort would not accomplish in many years for such effort is selfish and limited to localities. Our work should be heralded over the state and its results made known to all. Incidentally this should help us to additional appropriations commensurate with our needs. Our citizens should be informed of the importance of our investigations and the material good that may accrue from them. We would do well to make our motto the familiar lines:

> "He who whispers down a well
> About the goods he has to sell,
> Will never reap the shining, gleaming, golden dollars
> Like he who climbs a tree and hollers."

We should have larger appropriations for the work we are doing and planning to do. Steps have already been taken looking to this end.

The Louisiana Purchase Exposition is another subject to engage your attention. If we succeed in getting funds to make an exhibit, the Society should take steps looking to the collection and storing of fruit for that purpose. Authority should be given the executive Committee or a Special Committee to attend to it. Full discussion of the matter is desired.

At the summer meeting the Executive Committee voted to discontinue the Magazine at the end of the year. It has been suggested that a quarterly bulletin be issued in its place. If any one has a better scheme they should advance it.

The Seedling Apple question appeals to all orchardists. The Seedling crank is abroad in our land, but so far he has depended entirely on chance seedlings. My opinion is that our Society should make a move in this direction in a scientific and painstaking manner. Other states are at work on this problem.

We have as yet no permanent room assigned us. Some promises have been made and we hope to soon be installed in suitable rooms in Madison.

Why should not we join in the effort? I am in favor of giving $25.00 annually, as a premium, for the best winter seedling shown by members of our Society. Such seedling must score at least 75.

In conclusion, I wish to express my profound gratitude for the uniform courtesy and forbearance extended me by the officers and members of the Society during my continuance in the office of President. It has been my aim to serve you to the best of my ability and advance the interests of our organization at all times. I thank you.

On motion of Mr. Philips, the President's address, with its recommendations, was referred to the Executive Committee.

Secretary Herbst then read the following report:

SECRETARY'S REPORT FOR THE YEAR 1902.

To Members of the Wisconsin State Horticultural Society:—

Generally speaking, the past year has been a most profitable one throughout the state to the fruit growers and horticulturists in general. The weather conditions were such that most all fruit producing trees, vines and plants adapted to our state, set and produced a bounteous supply of fruit.

Occasionally we find a section in which the results did not come up to expectations but these are sure to happen each year. There was plenty of moisture in most sections of the state, so that crops did not suffer from the effects of drought. Blight seem to have been more prevalent this year than for some years past and we trust we may be able to ascertain the real causes and its remedies at this session.

Prices seem to have been favorable for all crops, especially on small fruits and the average price received for these the past season was the highest for some years.

There seem to be less desire on the part of the small fruit growers to increase the acreage of the cane producing fruits. Strawberry plantings seem to continue the same.

Apples and plums seem to have been planted plentifully the past year, more so than for some years past.

New beginners in the state still continue to secure their young trees for planting from states whose climates are much different from ours, and varieties not adapted are set in great numbers. In a certain section of our state 3,000 apple trees were secured from an Ohio nursery last fall and will be planted next spring. Time will tell and experience may be dear to those purchasers.

It seems strange that parties entering in the fruit business in our state should secure stock so far from home and varieties not adapted to our climate, when we have such good reliable nurseries who grow and send out what they know adapted to this climate.

Probably never before in the history of Wisconsin State Fairs was there a larger or better display of fruits and flowers than was at the last State Fair held the week of September 8th to 12th. Most of the exhibitors were members of our State Horticultural Society and those who were not, readily became members on being requested. Probably the largest exhibit of Russians made by Mr. A. G. Tuttle of Baraboo was at this fair, and Mr. Tuttle was there in person to attend to and explain the good and poor qualities of his collection.

The inspector of nurseries, Mr. A. G. Ruggles, was unable to discover any traces of the San Jose scale during his tour of inspection through the various nurseries and plant dealers' grounds throughout the state. Mr. Ruggles says, "The nursery stock everywhere visited was with a few exceptions as healthy as nature and man could make. The foliage was bright, smooth and clean. Better stock I think could not be found anywhere. Mr. Ruggles inspected 24 nurseries the past year in our state.

The question has come to mind several times the past year, are we as members of this Society doing our duty as such to the horticultural interests of our state? Our local societies throughout the state seem to either have disbanded or lost interest in the State Society. We were liberal enough, I thought, when we passed the resolution to pay the expenses of a delegate from the local Society to attend one of our two meetings each year if the local Society would senr a delegate at their own expense to the other meeting, and yet but two or three of our local Societies have accepted this proposition. We were liberal enough it seems when we, as a State Society, passed the resolution to make all members of local Societies in good standing, members of the State Society for a 50 cent fee instead of $1.00, and yet I dare say that not more than fifteen members of local Societies accepted this proposition. It seems the horticulturists of our state could better their conditions by the organizing of a local Society and the proper attendance of such. Our State Society has done all they can under the circumstances to help the local Societies, their willingness to pay the expenses of the delegate to one state meeting, the placing of the membership fee to the State Society at half the regular fee, and their quota of annual reports sent to them each year should do much towards bringing closer relations between the two. What more can the State Society do.

Our membership is steadily increasing, not at any great numbers each year, but with the limited amount of money it receives from the state and the extent of work carried on by the addition of the three experiment stations but very little is left, if any, to engage in the work of soliciting members. The past year I have had requests from several local Societies to attend their meetings and some provisions should be made for some good member from our Society to go whenever called.

Our previous records made at the various expositions should not cease and our committee who was appointed to wait on the State Commission should make special efforts to obtain as much as possible so that we may be able to make a large and creditable showing at the Louisiana Purchase Exposition.

The past year there has been a greater demand for our Annual Report and I have sent out as long as the supply lasted. Already I have received many requests from neighboring and distant states for our last report and these will be sent out as soon as received from the printer.

In making up our program I have tried to have those subjects discussed which at the present time seem to be uppermost in the minds of the horticulturists in the state, or in other words those topics which were suggested by members from time to time during the year. We have given one evening to the Horticultural Department of our State University and I feel as if we could well afford to do this. Our University is doing much for the horticultural interests of our state and there cannot be too much of this work infused in the minds of the young men who are interested in this line of work in the state. What are we going to do when such men as A. L. Hatch, Geo. J. Kellogg, A. J. Philips, Wm. Toole, A. G. Tuttle, F. K. Phoenix and many more of the old time fruit growers from whom we have obtained so much horticultural knowledge depart from us? Already they are leaving us one by one and the past few years we have lost some very valuable members and co-workers. The past year we have lost one whose teachings will always remain with us. I speak of Prof. Goff. As a former student of his, his genial face, kindly advice and teachings will always remain with me. He left some of his work unfinished that we all hope will not be abandoned until results are obtained.

I am glad to report that all efforts to secure a permanent home for our Society are about to be rewarded. At a personal interview with the governor and after looking about with him, we partially secured at least room for our library and place where our Executive Committee can hold their sessions. Our committee appointed to wait on the governor to secure a room as a permanent home for the Society informs me that they have assurances that we certainly will be in possession of one in the near future.

There has been added to our library the past year, a set of books including a complete set of transactions of the Illinois State Horticultural Society, including reports of N. W. Fruit Growers' Association. Mr. Hoxie's books pertaining to horticulture were sent to us by Mrs. Hoxie at the request of Mr. Hoxie before his death.

I wish to thank you all for the kindly interest shown in the work of our Society the past year and for the suggestions and advice given me while doing the work of the Secretary and trust the following year will be a prosperous one to each and every one of you.

J. L. HERBST,
Secretary.

Secretary's Financial Report for 1902.

Expenses.

Freight and express	$13 53
Postage	18 50
Printing and stationery	36 45
Miscellaneous	101 14
Secretary's salary	300 00
Total	$469 62

Receipts.

Received on expenses	$169 62
Received on salary	300 00
Total	$469 62

The President: I will refer the financial part of this report to the committee on finance; I think it is not necessary to take action on the balance of the report.

Mr. L. G. Kellogg then read the Treasurer's report, as follows:

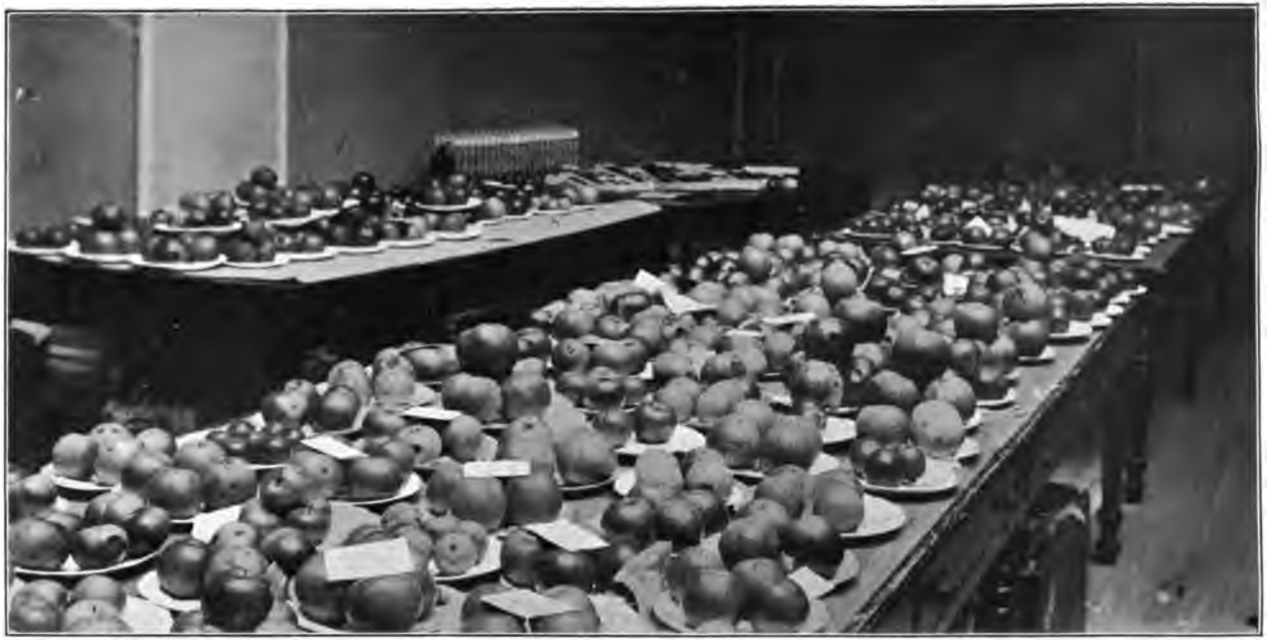

Fig. 3.—Fruit at Winter Meeting.

TREASURER'S REPORT.

L. G. Kellogg, Treasurer, in Account with Wisconsin State Horticultural Society.

1902.	Debtor.	
Feb. 6.	To cash from State Treasurer	$1,125 00
Apr. 29.	To loan German National Bank	250 00
July 9.	To cash from State Treasurer	1,125 00
	To cash Memberships	99 50
1903.		
Jan. 31.	To cash Subscriptions and Advertising	25 86
Feb. 3.	To Balance due Treasurer	277 93
	Total	2903 29

1902.	Creditor.	
Feb. 5.	By balance due treasurer	54 54
Feb. 8.	By loan paid and interest, German National Bank.	503 30
Feb. 6.	Order No. 20. By John Howie, expense annual meeting	58
Feb. 5.	Order No. 104. By C. F. Wannamaker, work on library	2 50
Feb. 5.	Order No. 1. By A. N. Kelley, premiums	1 00
Feb. 6.	Order No. 2. By [illegible] J. Menn, expense winter meeting	3 80
Feb. 6.	Order No. 3. By Edward Nye, expense winter meeting	4 80
Feb. 6.	Order No. 4. By W. M. Hall, expense winter meeting	4 00
Feb. 6.	Order No. 5. By M. S. Kellogg, expense winter meeting	1 60
Feb. 6.	Order No. 6. By A. L. Hatch, expense winter meeting	12 70
Feb. 6.	Order No. 7. By W. P. Bussey, expense winter meeting	4 00
Feb. 6.	Order No. 8. By A. D. Barnes, expense winter meeting	9 10
Feb. 6.	Order No. 9. By A. J. Van Epps, expense winter meeting	9 10
Feb. 6.	Order No. 10. By J. K. Jewett, expense winter meeting	4 35
Feb. 6.	Order No. 11. By A. A. Parsons, expense winter meeting	4 50

Feb.	6.	Order No.	12.	By Wm. Toole, expense winter meeting	1 50
Feb.	6.	Order No.	13.	By A. D. Barnes, premiums	10 50
Feb.	6.	Order No.	14.	By E. Wyman, premiums	1 50
Feb.	6.	Order No.	15.	By Edward Nye, premiums	50
Feb.	6.	Order No.	16.	By Parsons & Loope, premiums	27 50
Feb.	6.	Order No.	17.	By Gertrude Cairus, premiums	1 00
Feb.	6.	Order No.	18.	By A. J. Philips, premiums	1 00
Feb.	6.	Order No.	19.	By J. C. Blair, expense winter meeting	23 70
Feb.	6.	Order No.	20.	By F. M. Webster, expense winter meeting	31 90
Feb.	6.	Order No.	21.	By Baraboo Republic, printing	82 50
Feb.	6.	Order No.	22.	By C. L. Pearsons, expense winter meeting	1 50
Feb.	6.	Order No.	23.	By T. E. Loope, expense winter meeting	4 50
Feb.	6.	Order No.	24.	By Vie H. Campbell, expense winter meeting	68
Feb.	6.	Order No.	25.	By A. J. Philips, expense winter meeting	4 90
Feb.	6.	Order No.	26.	By L. F. Laiten, expense winter meeting	4 00
Feb.	6.	Order No.	27.	By C. H. Ramsdell, expense winter meeting	8 20
Feb.	6.	Order No.	28.	By Miss E. Treleven, expense winter meeting	4 00
Feb.	6.	Order No.	29.	By C. A. Abbott, expense winter meeting	4 80
Feb.	6.	Order No.	30.	By H. C. Christensen, expense winter meeting	4 10
Feb.	6.	Order No.	31.	By Geo. J. Kellogg, expense winter meeting	1 60
Feb.	6.	Order No.	32.	By Gertrude Cairns, expense winter meeting	15 50
Feb.	6.	Order No.	33.	By Mrs. F. Johnson, balance salary and expense account	89 87
Feb.	6.	Order No.	34.	By Mrs. F. Johnson, expense winter meeting	1 50
Feb.	6.	Order No.	35.	By W. J. Moyle, expense winter meeting	3 85
Feb.	6.	Order No.	36.	By F. C. Edwards, expense winter meeting	1 92
Feb.	7.	Order No.	37.	By W. H. Huppler, board bill	157 05

Feb. 13.	Order No. 38.	By C. E. Bassett, expense winter meeting	21	24
Feb. 13.	Order No. 39.	By A. J. Philips, pictures and express	6	70
Feb. 24.	Order No. 40.	By J. L. Herbst, part salary, 1903	50	00
Mar. 3.	Order No. 41.	By Baraboo Republic, printing...	28	50
Mar. 3.	Order No. 42.	By H. B. McGowan, rent for plates	1	50
Mar. 8.	Order No. 43.	By T. E. Loope, expense Madison and return	9	20
Mar. 15.	Order No. 44.	By Emma Jacobson, reporting winter meeting	59	34
Apr. 1.	Order No. 45.	By A. W. Latham, expense winter meeting	10	80
Apr. 11.	Order No. 46.	By A. L. Kreutzer, rent trial orchard	50	00
Apr. 28.	Order No. 47.	By J. L. Herbst, expense secretary's office	33	99
June 5.	Order No. 48.	By D. E. Riordan, expense Eagle River orchard	25	77
June 13.	Order No. 49.	By McBride Bros., printing contract	78	00
June 16.	Order No. 50.	By J. L. Herbst, expense secretary's office	43	12
June 20.	Order No. 51.	By A. L. Kreutzer, work on Wausau orchard	81	50
June 26.	Order No. 52.	By J. M. Smith Sons, premiums..	5	00
June 26.	Order No. 53.	By H. C. Christensen, premiums.	9	50
June 26.	Order No. 54.	By H. W. Carpenter, premiums..		50
June 26.	Order No. 55.	By W. H. Holmer, premiums....	1	50
June 26.	Order No. 56.	By A. D. Barnes, premiums....	5	00
June 26.	Order No. 57.	By M. V. Sperbeck, premiums....		50
June 26.	Order No. 58.	By Mrs. L. W. Barnes, premiums	5	50
June 26.	Order No. 59.	By Ray Barnes, premiums.......	1	00
June 26.	Order No. 60.	By Wm. Toole, expense account summer meeting	12	83
June 26.	Order No. 61.	By T. E. Loope, expense account summer meeting	7	17
June 26.	Order No. 62.	By Eva Loope, expense account summer meeting	3	56
June 26.	Order No. 63.	By T. E. Loope, expense account Madison and return	7	32
June 26.	Order No. 64.	By S. H. Marshall, expense corresponding secretary's office	13	94
June 26.	Order No. 65.	By L. F. Laiten, expense summer meeting	3	35

June 26.	Order No. 66.	By F. Cranefield, expense summer meeting	11 13
June 26.	Order No. 67.	By J. J. Menn, expense summer meeting	14 70
June 26.	Order No. 68.	By W. A. Lawton, expense summer meeting	15 74
June 26.	Order No. 69.	By Irving Smith, expense summer meeting	6 02
June 26.	Order No. 70.	By A. G. Long, expense summer meeting	15 80
June 26.	Order No. 71.	By C. S. Gardener, board bill	28 00
June 30.	Order No. 72.	By Oliver Gibbs, expense winter meeting	10 80
July 9.	Note and interest, German National Bank		253 13
July 24.	Order No. 73.	By L. G. Kellogg, trees for Eagle River	32 00
July 24.	Order No. 74.	By L. G. Kellogg, trees and express, Medford	32 65
July 24.	Order No. 75.	By L. G. Kellogg, expense account	20 97
Aug. 1.	Order No. 76.	By J. L. Herbst, salary	75 00
Aug. 1.	Order No. 77.	By A. G. Long, reporting summer meeting	25 00
Sept. 2.	Order No. 78.	By McBride Bros., printing contract	78 00
Oct. 6.	Order No. 79.	By S. H. Marshall, flowers, Goff's funeral	8 75
Oct. 14.	Order No. 80.	By J. L. Herbst, part salary	50 00
Oct. 27.	Order No. 81.	By Mrs. Robt. Ramsey, premiums at State fair	25 00
Oct. 27.	Order No. 82.	By F. H. Chappel, premiums	15 00
Oct. 27.	Order No. 83.	By C. Hirschinger, premiums	10 00
Nov. 7.	Order No. 84.	By A. L. Kreutzer, work on trial orchard	42 00
Dec. 4.	Order No. 85.	By McBride Bros., printing contract	78 00
Dec. 4.	Order No. 86.	By J. L. Herbst, expense secretary's office	25 03
1903.			
Jan. 6.	Order No. 87.	By F. Cranefield, delegate to Illinois State meeting	22 80
Jan. 14.	Order No. 88.	By M. Scheribel, work on Eagle River orchard	12 00
Jan. 31.	Order No. 89.	By J. L. Herbst, expense account secretary's office	67 48

Jan. 31.	Order No. 90.	By J. L. Herbst, balance salary, 1902	175 00
Jan. 31.	Order No. 91.	By J. L. Herbst, editor's salary	150 00
Jan. 31.	Order No. 92.	By J. L. Herbst, expense editor's office	30 88
Jan. 31.	Order No. 92.	By J. L. Herbst, superintendent trial orchard	50 00
Feb. 2.	Order No. 93.	By L. G. Kellogg, expense account and tree protectors	20 14
Feb. 3.	Order No. 94.	By G. Landweer, expense winter meeting	16 50
Total			$2,903 29

The President stated that he had substituted Mr. Coe in place of Mr. Cooper on the Finance Committee.

Election of officers being next in order, the President appointed as tellers, Mr. Bussey and Mr. Moyle.

The informal ballot for President resulted as follows: Total number of votes cast, 43; Dr. Loope, 37; Wm. Toole, 3; F. C. Edwards, 2; A. D. Barnes, 1.

On motion of Mr. Kellogg, the vote was made unanimous for Dr. Loope.

Informal ballot for Vice President: Total, 47; Mr. Edwards, 29; Mr. Moyle, 8; Mr. Coe, 3; Mr. Philips, 2; scattering, 4.

On motion, the vote was made unanimous for Mr. Edwards.

Informal ballot for Secretary: Total, 52; Mr. Herbst, 28; Prof. Cranefield, 23; Mr. Philips, 1.

On motion of Mr. Bussey, the vote was made unanimous for Mr. Herbst.

On motion of Mr. G. J. Kellogg, the Secretary was instructed to cast the ballot for Mr. L. G. Kellogg as Treasurer.

On motion, the Secretary was directed to cast the ballot of the Society for Mr. S. H. Marshall as corresponding Secretary.

It was moved and carried that Mr. A. J. Philips be elected as one of the committee on Trial Orchard.

THURSDAY AFTERNOON SESSION.

It was moved by Mr. Kellogg that the chair appoint a committee of three to make nominations for Executive Committee. Carried.

The President appointed the following to act as such committee: Mr. Abbott, Mr. Coe and Mr. Friese.

THE STRAWBERRY.

J. R. Reasoner, Urbana, Ill.

As civilization advances, our wants multiply; and although not usually very remunerative financially, still we need a few men who are willing to devote their time to experiments on the various lines of human action, to devise or discover something that will meet the wants of a progressive age.

We are in a world of great possibilities—anything which ought to be done, can be done. There are resources in Nature's store-house to supply the wants of every living creature.

I am willing to stake everything on these propositions. We do not have Alladin's lamp; neither is there any available magic, to create for us the luxuries and necessities of life; but we have that which is far better.

All power resides in thought, the ocean steamer, the locomotive, and the great Krupp gun, are materialized, and crystallized thought. When the Spanish fleet was sent to the bottom of the sea, it was done by an expression of American thought. Many ambitious persons walked over, and slept upon the grounds of the present mining camp of Cripple Creek; but a Stratton was needed to make a scientific study of the geological formations, before the Independence mine should be opened. There are mines of untold and undreamed of richness beneath and around us. The wealth of Wisconsin, and contiguous states is largely in the soil.

We want better applications, facilities, and adaptations, with which to procure the necessities and luxuries of life. We believe that all these things are available. We see the results of the stock breeder's efforts. Study the history of the thoroughbred roadster, which measures off his ten miles per hour with as much ease as the ordinary horse can travel his five or six miles. When an explanation is called for, the answer comes, *"Select breeding for generations."* The same may be said of other animals. We have the "Corn-breeders' Association" which is working on scientific lines, with promising results. But where can we secure the pedigree of an apple, strawberry, or any other kind of fruit, dating back five generations, such as some of the stock breeders are able to exhibit?

We assume that all living things, animal and vegetable, have their individualities, diseases and heredities, which may be transmitted; and that nature makes a constant effort to throw off the abnormal, and to develop the normal; but if we select the plant or animal of low vitality, it may not have force to overcome the impediments. Is there not danger that the continual cutting of grafts from the nursery rows, from trees which have never fruited, nor their ancestors for untold generations before them, must have a tendency to induce disease and sterility. Our business at the present time is to study the character, and so far as we are able, to make an estimate of the possibilities of the strawberry.

I do not believe that we have a strawberry, which has been on the market 20 years, that has not deteriorated and become unreliable.

I can see no reason why there should be any deterioration, if we handle and propagate it as carefully as the stock breeder does his cattle.

I can see no reason why it should not, with proper selection, be held up to its highest normal standard of quality: but owing to the diverse individualities of plants of the same variety, it is doubtful whether the exact original type can be preserved for any great length of time.

Within the last three or four years, we have been "cussing" and discussing, in a way somewhat amusing, the claims, and proposals which have been made in regard to breeding-up, and improving the strawberry by selection. It is certainly not too much to predict, that horticultural experiments on that line will be watched with great interest.

For improving the strawberry, we have relied mainly on raising new varieties from the seed. Out of every fifty millions of children born, there may not be more than one Clay, Webster, or Lincoln; but with careful selection of parentage, environment and culture, the number would probably be greatly increased. Probably not one seedling strawberry in a million has been an improvement on a half dozen standard varieties. Although at the same time, it is believed that many plants of extraordinary merit have been lost for want of recognition,

"Full many a gem of purest ray serene,
The dark unfathomed caves of ocean bear;
Full many a flower is born to blush unseen,
And waste its sweetness in the desert air."

The very small number of seedlings which have shown decided merit, has led most persons to conclude that raising new varieties from the seed, is a very uncertain kind of business.

The observations of a life time, and an experience of nearly 20 years on this line (under great disadvantages), convince your humble servant, that there is no open field where we may secure more definite and certain results, if we work in harmony with the laws governing plant life, and re-production. When we know more of these laws we shall have better success.

The demands of to-day, are for very prolific, early, medium, and late varieties of good size and color. The gardener wants something which will fill his empty boxes, and his purse. The average consumer is not yet educated up to first class quality. With many, sight is the ruling sense.

When we get a berry, as we probably shall, very hardy and prolific, of great size, good color, less juicy, more fibrous, and tough skin, which will bear handling as you would a peck of potatoes, there will be a demand for it. It will sell, but it is most likely that it will be a Ben Davis kind of concern.

Nevertheless there is a grown demand for berries of better quality—and I believe that our American horticulturist will be equal to every reasonable demand.

I suppose that I may be pardoned if I pass over the planting and cultivating; as our Horticultural Journals are full of such instruction. For the insignificant sum of ten cents, M. Crawford of Cuyahoga Falls, O., will send a booklet containing about all the information necessary for the strawberry grower.

However, it is always proper to advise that plants be procured from a reliable grower, and never from old beds. The

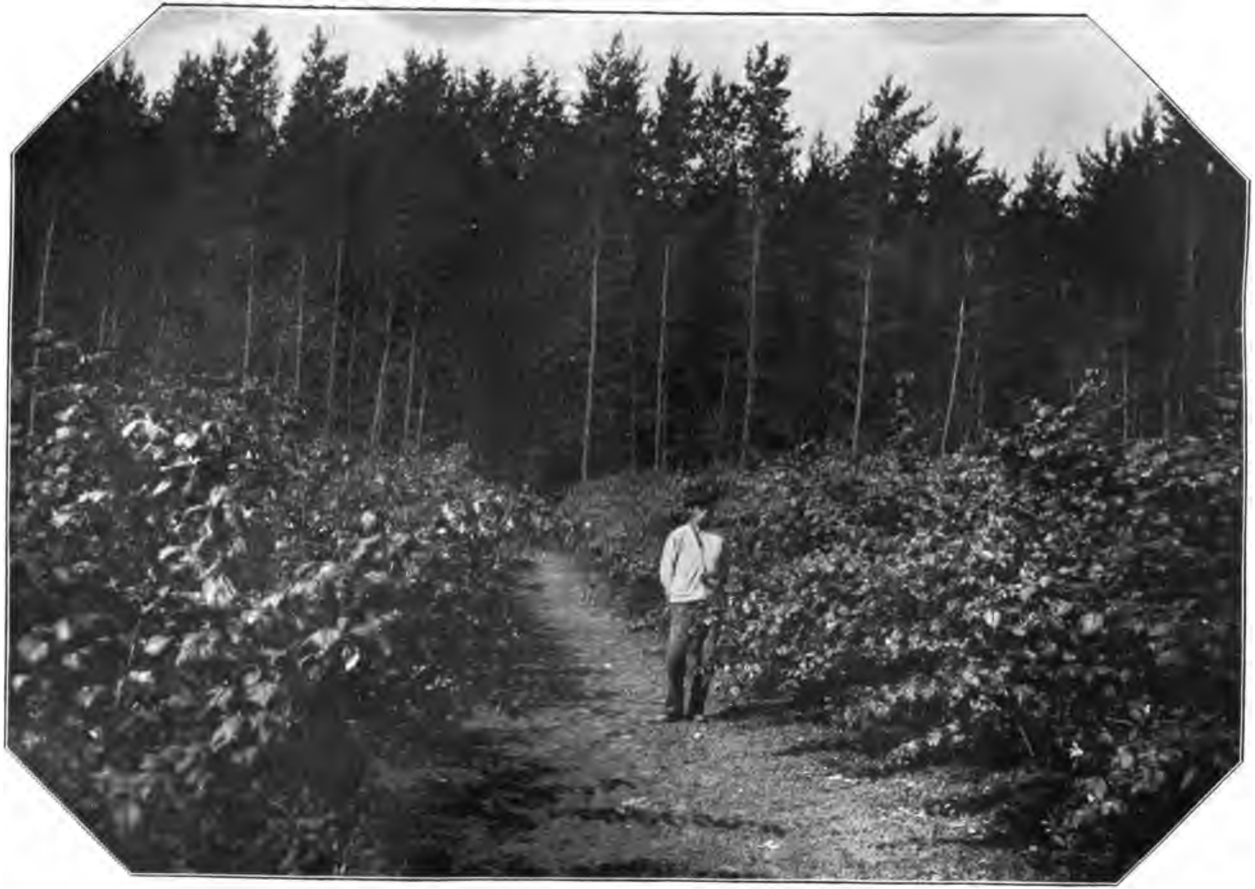

FIG. 4.—Columbian Raspberry.

roots should not be exposed to sun nor wind. Plant carefully. Cultivate frequently and thoroughly, with a narrow toothed cultivator, which will not throw the dirt, but will leave the ground level. Much work needs to be done with the hand hoe.

For the commercial grower, we come now to the harvesting of the berries. Much work, such as securing pickers, making crates, boxes, etc., can be done previously, as there is little time for that kind of work when the rush comes. To secure a small army of pickers who will do the work well, is not the easiest thing about the business. Some of our best pickers were boys; but the average town boy is not to be depended upon. Girls and women are usually the best pickers. To insure good work, each picker is numbered, and wears a badge with the number stamped on it. Each box in his carrier is stamped with the same number. If any bad work is done it is easily located. The best work is usually done where there is the least talking. Remember that you have extraordinary opportunities for training the youth to correct business habits. Allow each one to pick a box to carry home.

The most difficult thing is to market the berries to advantage. There are merchants who will sell your berries to the best advantage, and will make proper returns; but we are sorry to know that some of them are tricky, and would bear watching. The best way is to sell to them outright for the cash. Uusally the most satisfactory plan is to sell and deliver to the families. Put your best boys or young men on the delivery wagons, with instructions not to allow anybody to upset their good humor. The best families, and most profitable customers, prefer to buy their fruit fresh and direct from the producer. By honest dealing we may gain their confidence, and they are not apt to desert us. If we happen to put a few of the largest and best berries in the middle, and bottom of the box, they are almost certain to find them. They rather like to be imposed upon in that way.

DISCUSSION.

The President: I would like to have Mr. Reasoner tell us some of his methods in getting his seedlings; that I think would be of great interest to us.

Mr. Reasoner: Well, the methods of pollenization, crossing, would require a whole paper to itself. There are a good many things about that that are not thoroughly understood but we are working on that line and we hope to have something done. I have been a Methodist preacher and I had to work on parsonage lots and under disadvantages, and did not have room, but twenty years ago I concluded that there was a possibility of boiling all the winning points or qualities of our best berries down into one. I went to work on that line to get these. I employed various methods; I planted one garden out of just the plant that had the qualities that I wanted, and was careful to keep out everything that had very undesirable points, and I planted them all together, and I had berries when nobody else had any. Even in the summer there sometimes comes a cold rain and washes the pollen off, and if you have some other varieties, the chances are improved. Well, I cannot now name these varieties unless I had my list with me of just all the varieties that I had in one patch, and then if there was any one point of quality that I wanted to get into another berry,—for example, here is a large berry, the Bubach, for example, not very good color., it is a large berry and has some good points about it, maybe not sufficiently prolific, and we want to get some blood of something else into it. Well, now, if we wanted to cross that with some other pistillate, Warfield, for example, we have got to breed into something else to get the blood in. If the berry is very fine, as we frequently get it, fine plant, everything seems to be fine, not sufficiently prolific for the commercial grower, we get a little of the Crescent blood into it, and we are certain to correct it. The result is just as certain as anything else, by bringing those together, that you will get results. If we want to bring just those two together, we can plant them remote from all others close together, say, for example, the Crescent and something else that we want to get the Crescent blood into, and some-staminate,—the Crescent is not absolutely a pistillate—the safer way is to work through the Crescent and pollenize it, sometimes with the hand. We remove the stamens just as soon as they appear, get up in the morning very early and watch them in the night even, there is nothing that I know of that requires such careful watching, catch it right at the moment, and then with your brush pollenize from the source that you wish to have it done. Now hundreds of thousands of experiments have led me to say that itis not such an uncertain business after all, if we only work on scientific lines.

A Member: I would like to ask what is the age of this Senator Dunlap?

Mr. Reasoner: I am sorry that I cannot give the exact parentage, because that came from my bed where I had, I think, about six varieties; of course I can tell those six, and I can guess as to the parentage; it has some Crescent blood in it, and, of course, cross-breeding several times, it has some of the blood of the old Sucker State in it, and it has a slight neck and that glossy appearance and all that. There is another point that I would like you all to remember,—anything that does not show plenty of life and vitality is not worth fooling away any time with. If you make your selections—and it takes three years to bring a plant to its best—do not throw it away, do not condemn it, and my principle is never to introduce a plant to the public that has not been thoroughly tested for at least five years. I regard Dr. Burrill as one of the best and safest horticulturists in the country, and it took him four years to make up his mind in regard what to name the Senator Dunlap, in honor of our Senator Dunlap.

NEW STRAWBERRIES. ,

Mr. G. J. Kellogg, Lake Mills, Wis.

Mr President, Ladies and Gentlemen:—There is quite a latitude in this title. First: We will consider some of the newer varieties that have come to the front during the last five years.

Dunlap, (Senator), stands at the head of the list as an all round satisfactory berry; I know of no better; the only objection I find is that it makes too many plants; this must be prevented by keeping it in hedge rows, or narrow matted rows where its vigor and push will develop enormous crowns that will load down with the finest of fruit. I find it commended from North Dakota to the Ohio river. Its size, shape, color, texture and quality are all that can be desired; perfect in bloom, and if confined in narrow rows its productiveness will prove satisfactory.

Sample, while this is not strictly new, it has come to the front as the finest pistillate I have ever grown, large, perfect in form, of the best quality, firm, late and productive.

Klondike, perfect in flower, both early and late, large, productive and good quality. It will pay every one to give this a trial.

Kansas, pistillate, even size, late, firm, productive, and growers will not miss it to plant largely of Kansas.

Rough Rider, perfect, late, firm, but with one season's trial it is neither large nor productive. I shall hope for better things this year. My soil is rather light, its home is on clay and in Oswego county, N. Y., it is their best shipping berry.

Maximus, (Corsican), perfect, large, productive, first quality, one of the best for home use and near market. This is of the Jessie type.

Gladstone, perfect, vigorous, first quality, fairly productive.

Emperor and *Empress*, perfect, can't tell "one from t'other." This is of the Jessie type, large, good, choice, family berry and near market.

Monitor, perfect, one of the most promising large berries, good reports from all Experimental Stations. All should try this variety.

Hero, perfect, vigorous, productive, firm, best quality, large. There can be no mistake in trying this new berry.

Louis Gauthiere, is a failure as a double cropper, does not give even one crop. I consider this worthless.

Nick Ohmer, perfect, very much is said in its praises, of its size, quality, and productiveness. This is not strictly new. I have discarded it once, and again have it on trial.

Parker Earle Improved, perfect, so productive it is a failure unless you can irrigate and pile on the fertilizer; it was a disappointment from bloom to fruitage; the only improvement on Parker Earle is in making plants, but for ordinary field culture it is a failure.

Enormous, pistillate, vigorous, large, productive, good for near market.

Bennett, pistillate, vigorous, firm and moderately productive.

Excelsior, perfect, early, small and not profitable.

Carmi Beauty, no beauty or profit to me.

Margaret, perfect, vigorous, productive, large, number one quality. Worthy of trial.

Johnson's Early, very early and productive, vigorous, medium size, perfect bloom.

Long Jointer, perfect, late, large, vigorous and productive. Of Gandy type.

New York, perfect, large, fine quality. Plant and fruit of Jessie type.

Seaford, perfect, large, fine family berry, late and productive.

Ocean City, perfect, excellent quality, large but not very productive.

Gibson, perfect, large, ripens uneven. I shall discard it.

Tubbs, perfect, medium size, firm. Of Crescent type in plant and fruit.

Windsor, pistillate, the most profitable late variety last year of fifty sorts, medium size, tart, round, productive. This is an old variety but new to most growers.

Mexican Everbearing, bears a few early berries and then forgets a second crop. Shall discard it

As far as I can learn Enhance is the variety that has been guilty of fruiting in October, both east and west. I know of no variety of strawberries that gives a paying crop in the fall.

Of the twenty-eight varieties I have mentioned, about ten of them will pay for general planting. It is always safe to go slow on new varieties; but it is foolish not to go at all. Why cannot we have new varieties of strawberries tested at our Trial Station?

The following newer varieties come with big promises and who of the progressive growers of the state will test them? Here are twelve advertised by R. M. Kellogg, Michigan: *Challenge, Downing's Bride, Miller, McKinley, Midnight, Oregon Ironclad, Palmer, Sutherland, T. T. Lyon, Texas, The Dornan* and *Uncle Jim.* All of them good, better, best, and from earliest to latest, Weston Co., Michigan, have the following from $2.00 per dozen down: *Commander, Cameron's Early, Dewey, Ernie, Marie, Mrs. Mark Hanna, Nettie, Oom Paul, Lester Lovett, Pocomoke, Sampson, Uncle Sam, The Dornan,* and *W. J. Bryan.*

Here are twenty-four of the very new varieties, offered by only two growers of Michigan, then add the five hundred nurseries of the United States and Canada, nearly all of whom have some new kinds just ready to be introduced. Who, I ask you will sift out the chaff and give us the golden grain?

Wisconsin is quite a strawberry state, but what is our Experimental Station doing for us? Almost every person who is about to introduce a new variety is glad to furnish plants free to Experiment Stations two years in advance of the time of putting them on the market. Must we individually buy and test them at great loss to ourselves? Will not the state help us? If the Stations would test the best of these new kinds two years before they are put upon the market, it would save the strawberry growers of Wisconsin $10,000 a year. It is true two years is not time enough to test any new sort but if properly grown it would in a large measure sift out the worthless trash that is palmed off onto us year after year at enormous prices, then count our labor and losses in growing a lot of unprofitable stock and you will see wherein a Trial Station would help us wonderfully.

DISCUSSION.

Mr. Toole: I would like to ask Prof. Cranefield what are the objections to the Station resuming that same kind of work that it has done before. I think there must be some good reason why they should not continue to carry that on now.

Prof. Cranefield: It is true that years ago we carried on some extensive tests of strawberries, and we dropped it. I think Prof. Goff concluded, and I think you will all agree that his judgment was sound, that there was other work that we could do, to give the same amount of time and attention to, and money, that would be of more value than the strawberry. We looked upon it that the subject of variety tests was very largely a local matter; we tested over 100 varieties of strawberries, we had over 100 growing at that time. There was near us a very successful berry grower, Mr. Post, who is still engaged in the business less than two miles from our grounds, and while perhaps we were not as successful in growing strawberries as Mr. Post, still we did what we could, and we tried to raise good strawberries. The results were something like this, that the berries that in many cases succeeded with us were those that did not succeed with Mr. Post. I believe that every grower must test varieties for himself; I think it is work of very little practical value when conducted as experiment stations. It was the judgment of Prof. Goff that it was possible to do more profitable work than mere testing of varieties.

Mr. Reasoner: I do not think I fully answered the last question put by the President, that is, the method of propagation, that is, to grow up and plant and propagate any standard variety or seedling. During blooming time, constantly watch the blooms, and then as the berries are setting, examine every plant as far as we can, take time to it, and those that are the most promising, stick a stake down, carry a bundle of little sticks, and when there is something that promises to be very prolific, and it is a healthy plant, select the most promising and put your stakes down. Then when you have selected the most promising, pour water around it, soak it thoroughly, take your spade and take it up without stirring the roots, put it in the propagating bed without any berries on it, fill your propagating bed with them and then propagate from them, and then the next year make your selections again from these very plants again, keep on that way indefinitely. I think that any variety whatever would deteriorate in five years with taking the plants promiscuously from the rows; they are weak, and it is impossible for them to have good, healthy progeny.

Mr. Tippin: I will give you a little bit of experience as a strawberry grower where we have extensive fields, and what would be my idea of those points by which you should be governed in Wisconsin, if you think it would be of any value to you. The practical situation of these questions is the one that appeals to us of long experience, and I believe that the principle by which we are governed in our locality is one that should govern you.

First, we are governed in our planting by the variety that does best upon the soil on which we wish to plant it. In this connection I want to corroborate the statement of Prof. Cranefield in reference to varieties doing well on one side of the ground and not on the other. We are first governed by that thought. The second and most important thought we are governed by is, what we are growing for.

Of course we have gone beyond the possibility of the local market in our section of the country, because, within a distance of 200 miles from the home supply, between now and the 15th day of June we will ship 10,000 crates of berries. That being true, we are giving our thought to the gap in the market in which we fail. This is the point that I thought would be of importance to you people who may be contemplating going into the strawberry business in Wisconsin. That is, if you are going after a market to which you expect to ship, and it will hold good to some extent as far as your local market is concerned, because you must remember that with the extensive acreage of last year, we are going to supply all of your markets—all of them that are large enough to take carload lots for distribution, up to a certain time, and in view of that fact, and in view of the increase of the large acreage immediately south, in northwest Arkansas and Missouri points are going largely into later varieties. These later varieties are going to come into your markets in carload lots extensively. So that my judgment is, from a point of profit, that you can consider no point more carefully than the time that you expect to have to supply the trade, and it would occur to me that if you could inform yourselves as nearly as possible when the supply from the south will be exhausted, that if you grow varieties that would follow in then and take up the market and supply it, you would do much better than grow earlier sorts, that you would have to put in the market against this supply, because it is in existence, it has to be reckoned with.

Mr. Pearsons: It seems to me there is considerable nonsense about having so many new varieties. I know it has cost me considerable to experiment with new varieties, and if I had stuck to the Bederwood and Warfield, I am satisfied I would have been several hundred dollars ahead.

Mr. Rounds: I want to put in a word in regard to what Mr. Tippin said about avoiding coming in competition with the late berries from the south. I have frequently been on the market when the first crates of strawberries from Sparta reached that market. Those first crates were always what we called "Sand Warfields," that is, Warfields raised on sandy soil, and were, as a result, very poor quality. I have several times been on the market when that first car came in, and they were sold in competition with the Missouri Gandys, and as a result they were stacked up out in the street in the sun until after the Missouri Gandys were sold at a good price, and then they were sold to the peddlers at a very poor price, and the Sparta growers would be cussing the commission men for cheating them out of their berries. Now of course where the market is only a local

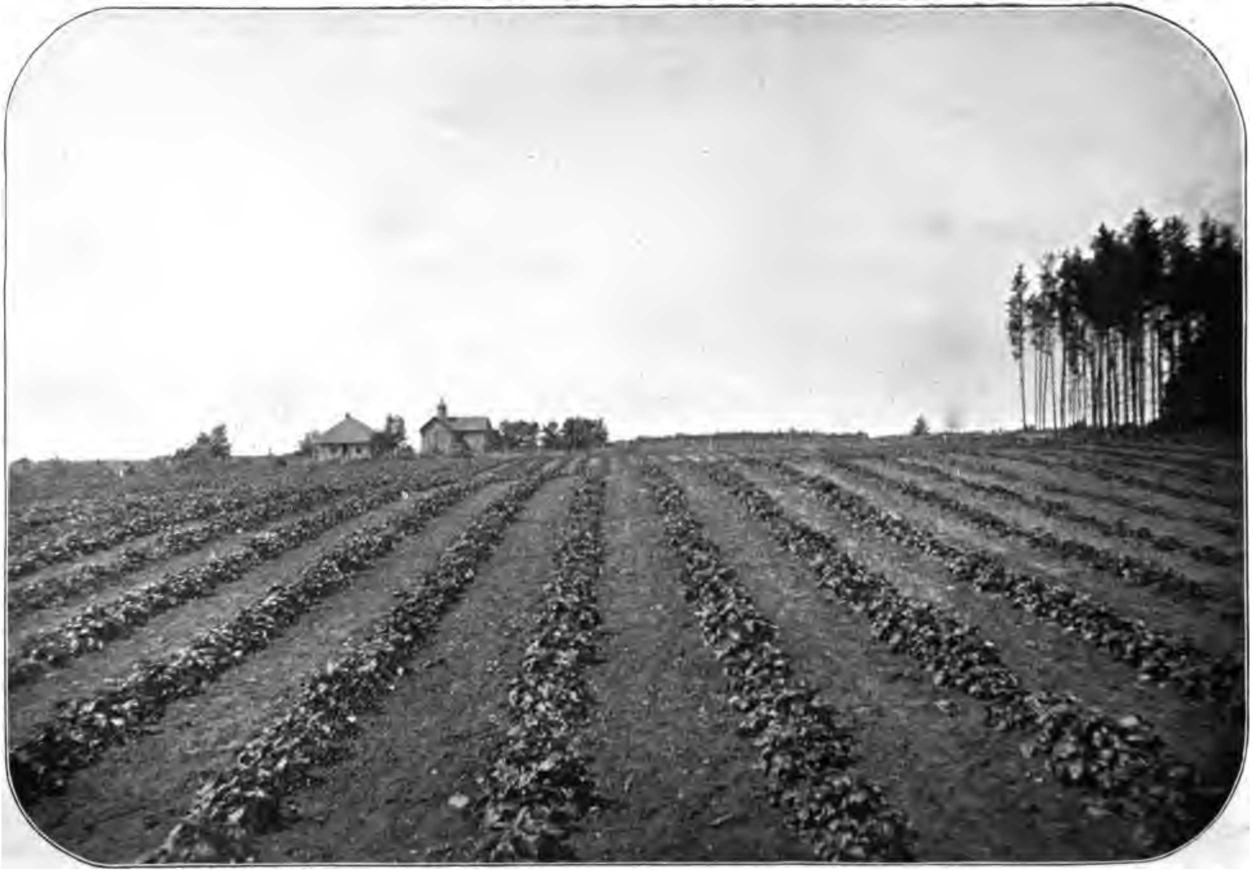

FIG. 5.—Dunlap Strawberry.

one, this perhaps would not apply, but where we are raising fruit and shipping it out by the hundreds of carloads every season, as we are at Sparta, that is certainly one of the factors that we ought to consider.

REPORT OF COMMITTEE FOR NOMINATING EXECUTIVE COMMITTEE.

Mr. Abbott: The committee decided that it was for the best interests of the Society not to make any changes on the Executive Commitee, excepting two; we recommend the names of W. B. Bussey and L. A. Carpenter.

On motion, the report of the committee was adopted.

PRELUDE.

Fanny K. Earl, Lake Mills, Wis.

I was surprised and some of my friends very much amused when I was invited to appear upon this program. I have never lived on a farm in my life, and I know nothing about either agriculture or horticulture except such general knowledge as any person of ordinary intelligence and observation must assimilate from having lived a number of years in a village, the center of a farming community. It occurred to me that your committee might have thought that a person of a lively imagination entirely unhampered by facts might produce a very interesting paper on horticulture.

Not long ago I heard the President of the National Association of Household Economics give a very charming address on the topics pertaining to successful housekeeping. Among other things she recommended a certain table of food values, by which a large variety of healthful dishes might be prepared, and the due proportions of fats, minerals, nitrogenous matter, carbohydrates, etc., be maintained without arriving at that unfortunate condition which marked the meals of "The Pettison Firsts," where the menu was "so hygienic that it was horrible." At the close of her address the speaker smilingly confessed that she spent one whole evening trying to solve from that data the problem hygienic breakfast for herself and husband, and was finally obliged to give it up, but added that she intended to try it again sometime.

A *little* knowledge *may* be a dangerous thing, but the ease, fluency, and fearlessness of consequences and conclusions which absolute ignorance engenders is one of the astounding marvels of public speaking, and is a frequent hall-mark of those rash souls who "rush in where angels fear to tread." But I will not presume to offer anything of the sort to this audience of specialists in their own line, and what I have to say has not been suggested from the happenings on the worker's side of the fence so much as from the leisurely observations of a stroller along "the open road."

"The Open Road."

"They change their skies above them,
  But not their hearts that roam,
We learned from our English mothers
  To call old England home.
We read of the English skylarks,
  And the spring in the English lanes;
But we screamed with the painted lories,
  As we rode on the dusty plains."

I can appreciate something of the feeling which moved the East Indian poet to write "The Native-Born." Almost my earliest recollections are of stories of "English sky-larks" and "The spring in the English lanes;" of neatly trimmed hedges, of rose-covered cottages and of gardens whose every foot was carefully cultivated for use or beauty. Amercan born and bred, I have probably an inherited distaste for the unkemptness of so much of American village and rural life. Whatever Kipling's injustice to the American people, he certainly touched with an unerring hand upon some of our faults.

"His easy, unswept hearth he lends,
  From Labrador to Gaudaloupe,
Till elbowed out by sloven friends
  He camps, at suffrance, on the stoop."

The worst of it is, it is all so unnecessary. Nature, untouched by the hand of cultivation, is nearly always beautiful, and if upon occasion, that adjective seems inappropriate, she still has always a charm. Even the arid deserts of the west, with their monotonous wastes of gray, invest themselves with the charm of silence and mystery, and mountains, glens, rivers, forests, level stretches of prairie, low, brown hills rolling into the purple distance, present to any mind at all open to the influences of nature, a peculiar fascination. So also cultivation has its distinctive charm. The waving fields of grain, the long corn leaves glistening in the summer sun, the orchards bursting into bloom, or laden with ripening fruit, the shade trees trimmed and orderly, the velvet green of the lawns, the masses of brilliant flowers, appeal in quite another way, but quite as powerfully, to our love of the beautiful. But there is an intermediate state, —a kind of vegetable purgatory,—which is neither nature nor cultivation, and it forces its unloveliness upon the eyes of every traveler upon the open road,—village streets with unshorn lawns, country roads redolent of may-weed, or rank with dust-laden rag-weed, back-door yards, where ash-barrels struggle for a footing among chicken-coops, wood-piles, coal heaps and the accumulation of years of disorder and slovenliness, and where the vegetable gardens strive to lift their heads above the ignominy of being daily drenched with the slops from the kitchen and laundry.

I know the immediate response which comes from a farming community when an appeal is made to them for improvement along this line. In the minds of men who rise at four o'clock in the morning to milk, whose waiting grain-fields permit no dalliance with the mere pleasure of the eye; whose hay is unsheltered from the threatening storm; whose life is narrowed down to a struggle with the elements and his tenants,—it is not easy to germinate that seed of civilization which ultimately flowers into the esthetic phase of living. It is not to be wondered, that along with the most of humanity the farmer deliberately sets aside the creed that the life *is* more than the meat, and the body *is* more than the raiment.

We are justly proud of our beautiful state. Nature has endowed it with a bountiful hand. There is scarcely a spot within its borders where she has not given us either soil or scenery, and often both. But large portions of the state, not well adapted to agriculture, have been denuded of their forests, and for want of adequate forestry laws have been left to become a howling wilderness, not recognizable as the same beautiful land that halted so many of the pioneers of an earlier day in their westward journey. I have ridden for dreary miles through some portions of northern Wisconsin where the outlook reminded me of nothing but "the abomination of desolation spoken of by Jeremiah the prophet." Stretches of blackened stumps reached out to a desolate horizon, for the fires have been permitted to burn down into the very soil, and there was scarcely a green thing to relieve the monotony of destruction. Other states, notably Minnesota and California, are awakening to the necessity of prompt and vigorous action in regard to the preservation of the forests, but Wisconsin, at least so far as any general public sentiment is concerned, is profoundly indifferent to these claims of the future upon us. Along these lines legislative action is necessary. The millennium is still too remote to hope that the millionaire lumberman will do aught to repair the damage which their greed for gold has made upon the beauty, resources and climatic conditions of our state.

But there are places and conditions where it ought not be necessary and probably would not be expedient to invoke the strong arms of the law to make improvements. With the soil and climate of southern Wisconsin, at least, we might have a country which. lacking as it does bold and striking effects in scenery, could rival any place between the oceans for attractiveness. It would not be a difficult or expensive matter for every farmer to plant trees along his own roadside. If elms and hard maples were alternated with box-elders, soft maples, willows and other rapidly growing trees, half a dozen years would exhibit a wonderful transformation, while we could depend upon the slower growing trees for the beautifying of the future. The trimness of a well-kept village street is not to be expected, nor in truth, is it really appropriate to a country road-side, but unsightly weeds should not be tolerated. A little persistent effort, with the means at hand on every farm, would easily destroy them, and once the roadside is sodded with blue grass and clover it may safely be left to take care of itself. The long, soft masses of grass, out of which are thrust the pink and white clover blossoms, are as pleasing to the eye, and as appropriate to the rural highway, as are the close-clipped lawns and studied effects of flower and foliage of the town and village.

Some of the prettiest roads I have ever seen betokened an intelligent neglect. One I remember in particular,—the picturesque, old rail fence, whose days, alas, are numbered, had its corners filled with golden-rod, wild sun-flowers and purple asters, and the fence itself was draped and festooned with wild grape vines and Virginia creeper which showed the first light frost touches of red in its beautiful leaves. No art of the landscape gardener could have made a prettier picture.

Then the surroundings of the average country home as seen from the highway leaves much to be desired. There are many degrees of unpleasantness ranging from actual squalidness through all stages of bareness and bleakness up to the ineffectual and inartistic efforts of well-meaning ignorance. A really beautiful front yard about a farm-house is the exception, but it is after all not so difficult of accomplishment. If the strenuous life of the farmer, or his conception of it, precludes his taking part in its beautifying, much may be done by the women and children. Mowing and raking a lawn, training vines and tending flowers, out in the sweet, fresh air of the morning, or when the heat of the day is over, is much less arduous than much of the work which falls to the lot of the average housewife. Here, again, the question of time for these things importunes for a consideration; but I have observed that a woman always finds time to do the things she really wants to do, whether it is concocting salads, making calls, writing poetry or digging in the dirt. Most women let themselves become slaves to their houses,—the insides of them. If there is a lack of means the woman becomes a slave to the kitchen,—to its cooking, its scrubbing, its dishwashing; if money abounds then she is a slave to her parlor, and wastes her time and strength in a superabundance of decoration until her rooms look like a fancy bazaar. One woman spends half a day in concocting a meal which is unappreciatively bolted in ten minutes, and another in the elaborate serving of many courses, while her soul is all the time racked at the thought of what is probably happening in the kitchen to her hand-painted china and cut glass. Plainer food and less elaborate serving might leave a fragment of time for the wholesome out-door life, and show a very distinct improvement in feminine health and temper.

In a climate like this where the temperature compels us to hover over a register or huddle around a coal-heated stove for five or six months of the year, it is a distinct flying in the face of Providence not to rush out of doors the moment the weather permits and make our out-door excursions as long and as frequent as possible.

If I may be permitted a bit of personal experience, I decided one spring to take care of my own lawn, which contains two large village lots. My soul had been worn to tatters by men who seemed to think it was of no importance whether they came to work at the time designated or a week afterward or not at all, and by boys whose only interest in their work was represented by the money which they supposedly earned. I delivered over the household gods to the care of a competent person and worked a couple of hours in the morning before breakfast and in the cool of the afternoon. At first, my neighbers stopped regularly to commiserate me on my hard lot, offered me sympathy and liniment of all sorts, advised me to sell one of the lots and in various ways expressed their abounding interest in the experiment. One neighbor even said that if he were not a married man with troubles of his own he would come over and do the work for me. My lawn was never before so smooth and green, my roses so full of blossoms, my vines so luxurient. I am not an expert in fancy gardening, but I can raise poppies and morning-glories, and my poppy-bed was the envy of the neighborhood, and the high board fence around my stable-yard was every morning a poem in purple. Toward the close of the summer the neighbors still stopped to speak to me as they passed in the morning, but they began to say, "How well you look."

If people lived out of doors more their houses would not need so much cleaning, and if one wasn't there much to see, even a little dirt might occasionally be ignored for the sake of the normal appetite, the healthy sleep, the erect carriage and the buoyancy of spirit which outdoor life engenders.

> "The world is too much with us: late and soon.
> Getting and spending we lay waste our powers:
> Little we see in nature that is ours;
> We have given our hearts away, a sordid boon.
> The sea that bears her bosom to the moon;
> The winds that will be howling at all hours,
> And are upgathered now like sleeping flowers;

For this and everything we are out of tune;
It moves us not.—Great God! I'd rather be
A Pagan suckled in a creed outworn:
So might I, standing on this pleasant lea,
Have glimpses that would make me less forlorn;
Have sight of Proteus rising from the sea;
Or hear old Triton blow his wreathed horn."

While there are, of course, many beautiful country homes, yet some work that shows a righteous intent is marred for lack of an intelligent study of the conditions and surroundings. I have seen some homes whose immediate surroundings were all that could be desired, but whose outlook upon the street came blankly up against—a barn. Think of looking out in the morning and seeing the hints of a marvelous sunrise flashing out from behind the barn! Or think of having to go down behind the stable yard to see a sunset! The sunrise, for people who have sufficient strength of mind to elect that rather than a morning nap, and the sunset, for everybody, are two of God's good gifts to humanity, the golden gates through which we may pass into new realms of light and beauty. I think a man ought to be liable to legal prosecution who builds his barn directly across the street from his house.

Then again when trees *are* planted they are not always planted wisely. They should not be so close together as to entirely exclude the sun's rays and make the highway damp and unhealthful. Great care should be exercised in their position in front of a house. They should be either well separated, or well trimmed or both, so that they will not obstruct the view of the street from the house or shut in the house too much from the street. Few people recognize the value of trees as a background to the house, but group them in front, leaving the sharp building lines without relief, making an unpleasantly distinct and angular sky-line as seen from the highway.

The artistic value of low shrubbery and vines against the house connecting it to the ground, instead of leaving it sharply defined, is also ignored, and there are many effects in flower-beds of conglomerate colors which are anything but restful to a sensitive eye. Flowers, as seen from "the open road" should be masses of color against a back-ground of green. A very ordinary blossom often takes on an unexpected beauty so treated; as for instance the common wild mustard which grows in such profusion in southern California. The people there appreciate its effectiveness in decoration, and nothing can be more beautiful than that mass of delicate yellow against the tawny brown of the hills. This is Nature's method. One cannot improve much upon Nature in color effects. One spot of ground will be blue with violets, another white with daisies. A daisy field, nodding in the summer breeze, is something to be remembered, and is, in fact, one of the cherished memories of a drive along a New England highway. Any one who has seen California poppies, shaded from a delicate yellow to a deep orange, covering miles of meadow, gets a lesson in color which few artists would be daring enough to give.

If he may be considered a public benefactor who "makes two blades of grass to grow where but one grew before," why may we not organize ourselves into an unlimited Club of Public Benefactors, and by each one planting "over against his own house," make the deserts of our highways "blossom as the rose."

But I am by no means a pessimist. Things might be worse, as the old farmer said when asked his opinion of his son's proficiency as a cornet player. The young man had been edifying his family with his newly acquired accomplishment, and the old gentleman's comment on the performance was,

"It might be worse. Thank the Lord, there's no smell to it!"

So, the present outlook give us many reasons to be thankful and hope for better things. Town and Village Improvement Leagues are creating sentiment along this line, as well as such conventions as this. Use and beauty are not so widely separated, and while these gatherings consider mainly the question of utility, yet one who has his finger upon the literary life of the day will note a corresponding impulse toward the consideration from the artistic and ethical standpoint. Between Charles Dudley Warner's "My Summer in a Garden," and "Elizabeth and Her German Garden," are a long list of garden books, and along with these,—which are by no means treatises on the propagation of plants,—there is a steadily increasing growth of periodicals, like "Country Life," which concern themselves with outdoor life in forest and field and garden. There is certainly a tendency to estimate the garden at its full value, not only as a source of supply for the larder, but in its relation to the demand of a growing civilization for a re-

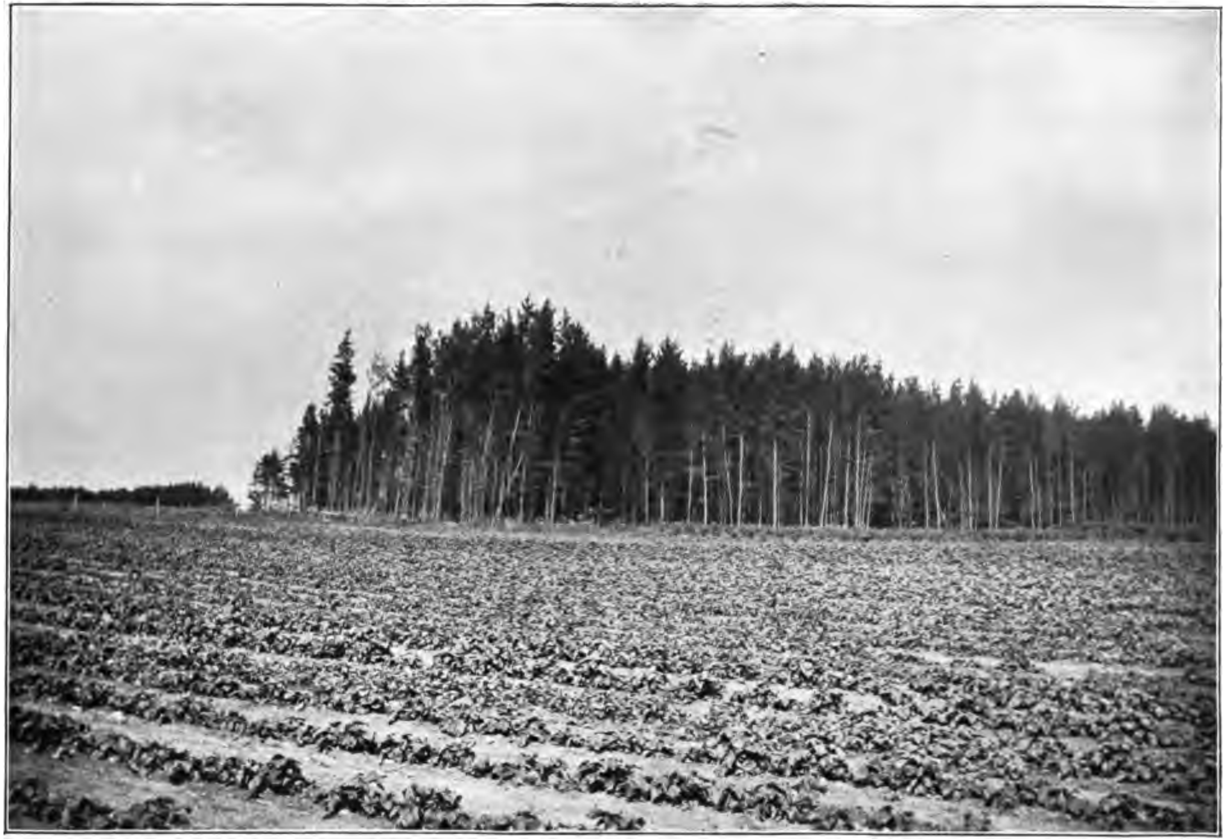

Fig. 6.—Dunlap Strawberry.

sponse to its esthetic requirements, until at last the garden shall occupy its true position as a component part in the upbuilding of the ideal American home.

AN IDEAL CITIZENSHIP.

Mrs. S. G. Floyd, Eureka, Wis.

In order to have an ideal citizenship we must have ideal citizens. They should be honest, unselfish, self-reliant; should possess a regard for the welfare, rights and opinions of others; should have a thorough education in regard to the laws of life, a love of country and a willingness and ability to serve in time of need.

Good citizenship is manifested in many ways,—as influencing for the right public sentiment, in having the courage of one's convictions, to stand firm for truth and justice, to sacrifice personal ambition for the public good.

How near do we come today to having this condition? With all our facilities for education and ease of living, we have not the right motive power back of it all to make an ideal citizenship.

With the greed of trusts and big corporations which create in man a selfish nature and a love of money, and consequent power causing strikes and bitter feelings of enmity between capital and labor; the saloon power with all its train of associated legalized evils to educate and make our morals; the ignorant foreign population combined with the liquor habit, to produce anarchists, and our Mormon population with its demoralizing sentiments on polygamy, it is no wonder we have reached a state of affairs that makes the wise man tremble for the future of his country, and ask the question, What are we to do to turn the downward course which we are pursuing?

Many influences are at work in various ways to open the eyes of the people to their danger. Chief among these is the society of women called the Woman's Christian Temperance Union, which with its forty departments of work, has carried on an unmitigated warfare with the liquor traffic, and that of opium and other narcotics, and all forms of legalized vice, for thirty years. Its work, though slow, has not been done in vain. The dawn of a better time is breaking. Men are coming to realize that employes cannot be depended upon for good, faithful work when their brains are addled and their nerves unstrung. The railroad corporations will no longer allow drinking among their employes, and many firms employing help are following their example. Athletes, prize-fighters and even wine-testers, must be total abstainers if they would be successful.

When we have done away with this awful drink habit and not until then, will we be able to free this land of its haunts of shame where 46,000 unwilling girls are every year sold into a slavery worse than death, and from which only a small per cent are ever rescued. It is hard to understand why our voters are so slow to cast their votes for the uplift of humanity and the downfall of all these evils, which could so easily be accomplished, when they are ready and willing to risk their lives in warfare for some weak, down-trodden nation.

It is to the coming generation that we must look for an ideal citizenship. With the present advantages for education, mental, moral and spiritual, we have a right to expect a long stride in that direction.

With scientific temperance taught in our public schools; the Loyal Temperance Legion, an organization of children for the purpose of educating them in regard to the effects of alcohol and narcotics, purity of life, right living, etc., and the temperance teaching in our Sunday schools, it seems as though some or all of these advantages should be available to every boy and girl in the land, and thus lay the foundation for a good and useful life. Every child has the right to be well born, which means healthily born and with good moral tendencies. "Good health is at the bottom of all things good."

If good health does not always make good morals, poor health often conduces to bad morals, and as example is better even than precept, parents should endeavor to be what they desire in their children and teach them to consider it their duty to be good citizens.

When this is done by a majority of the people, then will we have the right conditions for an ideal citizenship.

"The world wants men, large-hearted, manly men;
Men who shall join in chorus and prolong

The psalm of labor and of love.
The age wants heroes—heroes who shall dare
To struggle in the solid ranks of truth;
To clutch the monster, error by the throat;
To bear opinion to a loftier seat;
To blot the error of oppression out,
And lead a universal freedom in."

HORTICULTURAL WORK FOR WOMEN.

Mrs. Mae L. Bradt.

Mr. President, Ladies and Gentlemen:—When it was suggested at the annual meeting of the Rushford Horticultural Society that our delegate to the state meeting might be a woman, the question was asked of the state President, who has the honor to be a member of our Society, "If it was customary to send lady delegates to represent local Societies," he said, "Well, no," "but no other Society is just like ours." I then glanced over the audience and counted 35 ladies and 8 gentlemen, and when a few days later I received from our state Secretary a request to furnish a paper on "Horticultural Work for Women," I thought here surely is the "eternal fitness of things."

Horticulture for women has a pleasing sound to those who are familiar with some of the possibilities in this direction. The subject is truly inexhaustible.

Horticulture and agriculture are fast becoming sciences—in fact are sciences—and those engaged in them are already beginning to feel the gratification and pleasure of dominion.

We revere the older generation of horticulturists for, on the foundation they have given us, we of this generation are building the progressive horticulture of today.

Horticulture as a business for women is already an accomplished fact and its doors are opening to thousands all over our land. Lord Bacon tells us that gardening is "the greatest

In the first place no woman or man either need expect to be-
equally so to tired, nervous women. It is an acknowledged fact among our best authorities, that the physical inferiority, nervous

irritation, and insanity, which is sapping the lives of our women, is largely due to lack of fresh air and proper exercise.

Some one asked an old horticulturist something about plants, he frankly answered, "I don't know" and added "the most experienced of us always find something to learn." "It is impossible for a woman to have nervousness or tantrums if she turns her attention seriously to horticulture."

In the first place no woman or man either need expetc to become a successful horticulturist unless she has an inborn love of "green things growing," if she can look upon a well ordered garden without feeling her pulses quicnen,—if she is wholly indifferent to weeds versus vegetables,—in short, *"does not know beans"* when she sees them,—except on a table, then I say, she had better turn her attention toward other pursuits, for no garden will ever smile on her. We must love and appreciate our work. Patience is a virtue that adorns the horticulturist and happy is the woman in this or any other calling who possesses that precious gift.

There are few industrial pursuits in which economy plays so important a part as in horticulture. Woman by nature is an economist; the minor concerns of the business are what turn the tide, and men workers as a rule consider these apparent trifles not worthy of their attention.

Horticultural pursuits, therefore, seem peculiarly adapted to woman. True, she must to some degree have certain business qualifications, with energy and determination. If she possesses these, with a natural aptitude for the work, success will follow.

We are glad to know that there are in our "progressive horticulture" and its many and varied operations and services, fine opportunities for the exercise of feminine skill and ability, so that none need be turned idly away. Here there is room for all that may apply and the results are gratifying and pleasant, bringing to ourselves and those about us health, pleasure and profit.

The pursuit of horticulture gratifies every sense of our nature. How we all enjoy the culture of flowers. They are always beautiful, always useful, and always profitable to our mental and moral growth. Nothing appeals to the emotions with more eloquence than the speechless flowers, their very silence arouses within the human breast the most tender, the most ennobling sentiments. Although there is nothing religious about flowers, we firmly believe that their use indicates a degree of refinement and culture.

What a beautiful thing is the Flower Mission whose work cheers the invalid and ministers to the "mind diseased," and sows the seed of hope that keeps life fresh and green for many a one who had but a barren outlook.

We do not think any one loving flowers can be utterly bad. If we find any one going about doing good we do not inquire as to their creed; their work tells of their faith. Those who go forth with a heart full of human affection and perhaps with a handful of flowers, rarely fail of their mission be they Jew or Gentile.

It was only a tiny flower,
  And little it cost in the giving,
But it scattered the night
Like morning light
  And made a day worth living.
Through life's dark warp a woof is wove
In shining colors of light and love,
And the angels smiled as they watched above,
  Yet a little it cost in giving.

It was only a kindly word,
  And a word that was lightly spoken,
Yet not in vain,
For it stilled the pain
  Of a heart that was nearly broken.
It strengthened a fate beset by fears
And groping blindly through mists of tears,
For light to brighten the coming years,
  Although it was lightly spoken.

It was only a helping hand,
  And it seemed of little availing,
But its clasps were warm,
And it saved from harm
  A brother whose heart was failing,
Its touch was tender as angels' wings
But rolled the stones from the hidden springs,
And pointed the way to higher things,
  Though it seemed of little availing.

A smile, a word, or a touch,
And each is easily given,
Yet one may win
A soul from sin
Or smooth the way to heaven.
A smile may lighten the failing heart,
A word may soften pain's keenest smart,
A touch may lead us from sin apart—
How easily each is given!

The Chairman (Mr. Edwards): I am certainly voicing the feeling of this assembly in thanking the ladies for these three able papers.

On motion of Mr. Converse, these ladies were made annual honorary members.

HARDY PERENNIALS.

W. J. Moyle.

Nothing will make more show or give more satisfaction throughout the summer than a bed or border of hardy perennials on your lawn. Provided the bed is properly located, put in the proper condition and planted with the varieties adapted to your locality.

In the first place a bed of hardy plant should always occupy a place on the back side of the lawn, as a rule, of course there are exceptions to this, for instance, some of the very dwarf varieties may be planted in very narrow beds along the edge of a walk with good effect.

The early blooming dwarf Iris (Iris Nudicaule) or the golden wave Coreopsis Lanceolata, may be mentioned as examples thus planted they make a very pretty effect while in bloom, and as soon as this period is over they can be cut back so as to appear not unsightly.

But as previously stated most of the hardy perennials are of a more or less tall or sprangly growth and thus are best planted against a back ground of shrubbery, a fence or something of that nature. I recall to mind an instance of the improper planting just mentioned, it was a bed of the tall rank growing Golden Glow which had been planted in a most prominent place on the front of a lawn. There it grew flaunting its great weed-like growth in the face of every passer-by and giving the entire lawn which had many desirable and beautiful features a coarse, vulgar appearance.

Having decided where you will have your bed, the next thing is to properly prepare it. A thorough spading and a goodly amount of well rotted manure should be used in the preparation.

The bed or border being ready the next thing is what shall we plant and in what manner. The Germans who are very successful with hardy perennials, I notice, set out the plants in a very systematic manner and give thorough cultivation the entire season.

In order to have the border look nice all the season great care should be taken in setting the plants so that some will be in bloom the entire summer. This is not a difficult matter provided you are familiar with the blooming period of your flowers.

Here is my selection for a bed or border for Wisconsin and the manner in which I should plant it: About 3 feet in width is amply wide enough for your border, along the front edge of this I would plant a row of Scotch Pinks; these should be set about six inches apart so as to form another row the first season. Back of these, as close as you can set them, set a row of Mertensia Virginica, a very early blooming nature plant that should be better known. Then should come a mixed row of the following, setting them alternately in the row: Phlox in colors, Aquilegia in colors, Lemon Lily, German Iris in colors, Coreopsis Lanceolata, and Pyrethrum Rosea Grandiflora.

Now for the back side of your bed or border set in your more robust tall growing varieties such as Paeonies in colors, Japan Iris, Larkspur, Yucca, Tiger Lillies, Japan Lillies of the Speciosa variety, viz.: S. Alba, S. Rubra, S. Rosea, a few Hollyhocks and an occasional clump of Golden Glow.

All the above mentioned plants will thrive and grow more beautiful every year. About every fourth or fifth year, however, to have the best results, the plants should be taken up divided and reset.

DISCUSSION.

Mrs. Barnes: I want to ask Mr. Moyle if he has had any experience with the perennial snap dragon?

Mr. Moyle: Yes, I san say in regard to the perennial snap dragon, that there is a variety that is sweet scented, and I have grown it in this state, though it is not very hardy, still, if properly cultivated we might expect some plants to come through. It is a very pretty thing, but I would not recommend it for general planting.

Prof. Cranefield: I only rise to say that we have with us a gentleman who, although an amateur, has made a very marked success with perennials, as well as other flowers. We are glad to welcome Dr. Everett, and shall be glad to hear from him.

Dr. Everett: Flowers have always been a great pleasure to me to cultivate and I have studied the requirements of various perennials, as well as annuals, and I consider the first thing is the condition of the soil and the quality of soil, a sufficient preparation, and planting the perennials, and annuals at the right time. I am quite pleased and taken with the wild flora, the native flora, and I would mention the flowers that are very successful in being transplanted. Their cultivation of course will require that their natural habitude be followed, some planted in the shade, some in sandy soil and mixed soils, always following the natural habitude of the plants wherever you find it; that is one of the first considerations.

There are the trilliums that are very fine to plant in shady places, the Jack-in-the-Pulpit, Liver-wort (Hepatica). Trailing arbutus is said to be a very hard plant to transplant, but I have had success with it; it was sent to me by a friend from another part of the country, and I must say it has lived finely.

The Solomon's seal, real and false; blood root; marsh marigold; columbine, yellow, red and blue, are very easily transplanted and live from year to year, and the seeds come up right along and take care of themselves. The spider wort is a very beautiful flower, blue, and has about two and three complete blooms from along in June till the last of August, sometimes it will scatter and cannot be killed. It was considered quite a flower in the time of Charles the First, a gardner took it to his court and made it quite popular there.

There are the various violets that come out early in the spring, they will live anywhere, in any border, in the shade or in the sun, and the wild geraniums; then the wild lupier, wild pea and the wild indigo, with a blue flower, sometimes white and sometimes cream, the hare bells, blue bells of Scotland, grow anywhere.

The ladies' slipper is rather a hard thing to make live, but you can do so by taking it up carefully with the roots, putting something around the roots, and planting it in a moist place. Water it well just after coming up.

The tall meadow rue, spirea pink and white, two to four feet always, they will never die, beautiful sight; and the wild lilies, *canadenses,* or the wild yellow meadow lily you find in swamps and moist fields, is a beautiful lily, easy to find and easy to grow; and the Turk's cap lily, grows in low lands, but not such swampy lands as the previous one, three to seven lilies on a stalk, sometimes, though, in cultivation, you will find 40 on a stalk 9 feet high.

There is the red wood lily, that opens up, the petals are quite dark, a beautiful color; they are rather hard to keep, they need a rather thin, gravelly, sandy soil.

The wild aster, the New England wild aster, the purple one is very satisfactory, large purple flower, does not run all over your garden. The other wild aster I have had run all over the garden, and have had a constant struggle in digging them out, so I only keep one variety.

And the Liatris, or blazing star, I think is a very beautiful, showy plant. You know this grows from two to three, four, or six feet high; you see it along the railroads, the hard soil, you see it in prairie soil. Another variety of the spicata where the flowrets are very closely set like those on the mullen stalk, there are about fifteen inches of flowrets on the stalk, the whole growing four to five feet high. They grow into blossom in October; these transplant very finely indeed, very successfully, and they are a showy flower, the whole wand, 15 inches to two feet long, is a very showy thing as it waves among the wild flowers, it makes a very effective display, being very beautiful and fine as cut flowers in vases to have about.

There are the black-eyed Susans, they are very beautiful and very hardy and showy and very effective in a border in a clump of other flowers.

Then there are the various mints, gentians (closed and open), the wild hyssop, the blue and the white, great lobelia, cardinal flower, is very beautiful, very showy, some are very, very large indeed, blue and red and cardinal color, very showy, very effective, and live forever, you might say.

The you come to shrubs; there is the hawthorn, very easy transplanting, leaves and berries are fine in the fall, and the witch hazel, dogwood, honeysuckle, the vine and the bush, and the bitter-sweet vine, all very fine and effective and live without trouble. Perennials are more satisfactory for attention and and cultivation, they reward you for time and expense, they require very little covering and come up every year. Of course they have to be transplanted and divided once in a while; they grow so rapidly that they require attention in that way. My experience with wild flowers is that they do not bear transplanting very readily until they have grown for some time in one place.

Prof. Cranefield: I wonder if the members here really have comprehended the scope of Dr. Everett's work and the work that he had done. It serves to emphasize the point brought out in one or two of the papers read by the ladies, that where there is a liking for this work, there will be time. Here we have a man who is a busy physician who has work along other lines, yet he has found time to go from one end of the state to the other; he has named for you a magnificent set of flowers that may be had for the digging, you can go out into the woods and fields and get them, they far outclass Mr. Moyle's list that he bought from a nurseryman and paid a high price for,—outclass them two to one. He has named ten beautiful flowers where Mr. Moyle has named one. They are all natives of the Wisconsin fields and woods, the native hardy perennials. I wish to commend to the Society that work and am glad that it is going on record, so that we will have something to choose from, and we need more men like Dr. Everett, and more women like those who have given us such excellent papers this afternoon, so that we may be known abroad, not only as the Wisconsin State Apple Society, as we are sometimes now, but as the Wisconsin State Horticultural Society.

HOW TO GROW PEARS IN CENTRAL WISCONSIN.

J. S Shulz, Lake Mills, Wis.

First of all would say, that I have no life long experience in growing pears in Wisconsin. Neither have I any private method to keep the trees alive until old age, but maybe I have met with as much disappointment as anyone else, yet I hope that some of my words will be a benefit.

About fifteen year ago I planted my first Sheldon pear tree and of course it blighted down to the ground the first season, but I kept on planting and am not through planting yet, so by this time I have quite a few trees in bearing and so will give a short description of some that have borne fruit. The Flemish Beauty has borne fruit with me. The fruit is well known by most of us, usually large size and of high quality if not crippled by scab. The fruit on the lower branches of my trees last year was hardly fit for use on account of scab. The trees blight badly; top fruit fine. Vermont Beauty, a smaller pear, also of high quality and the fruit is not so apt to be affected by scab; tree hardy, very little blight. Clapp's Favorite, large fruit and of good quality, but trees blight as bad or worse than Flemish Beauty. Bartlett is almost too tender for Wisconsin, but one of my trees branched out low; stands in sod; is about ten years old and has borne profitable crops for eight years. Lincoln of Illinois is a good and large fruit; trees seem hardy, but have blighted some with me. Lincoln coreless, top grafted, trees have borne; fruit seems to keep long, although of poor quality. Pres. Deneard, fruit large, fine quality (but not fit to pass in fine company and high-toned people, as they are apt to spot their clothes and get their fingers smeary); season December; trees hardy so far and free from blight.

Gakovska and Bessimainka Russians, fruit of poor quality trees blight badly, especially Bessimainka; both should be discarded. Mt. Vernon is a good late pear, trees so far hardy and free from blight. Rutter has stood the test for about ten years, very little blight, fruit good size and fine grained, should take the place of Kieffer. Wilder early top grafts have borne heavy, quality only fair, trees blight badly; Koonce in tree more hardy and healthy than Wilder, but in fruit less desirable;

Tyson fruit medium size, good quality, trees have done well. Margaret top grafted have done wonderfully well, fine fruit, little blight. Garber and Kieffer very much alike both productive and of poor quality, trees hardy so far and free from blight. Longsworth No. 1 trees very hardy and free from blight, fruit medium size, fair quality; in fall some time found a few specimen of Longsworth on the ground. I picked them up and laid them away to ripen in some oats to find out how good the Longsworth really was. After some time when I wanted to sample them, they were gone. The boys fed the oats and ate the pears. When I asked the boys about them they assured me they were of fine quality; yes, boys should be permitted to sample pears and strawberries so as to get them interested in fruit growing.

Sudduth fruited on top grafts, fruit small to medium, good quality; trees root-grafted in spring of 1897 have not borne yet. Trees seem hardy and free from blight. Besides the above I have fruited others. If I were to give a list of varieties adapted to Wisconsin, would name three for the most hardy, viz.: Warner, Longsworth No. 1, and Sudduth. The Warner has not fruited with me yet, but I have had samples of the fruit which I think is better than either Longsworth or Sudduth. I have a few trees of it agrowing; it is said to be an ironclad and immune from blight. The trees are propagated and for sale by M. J. Graham of Adel, Iowa, and are sold at a reasonable price. Nurserymen of Wisconsin ought to get it, and propagate it for our own state. For a second hardy list would name the following: Flem. Beauty, Vt. Beauty, Lincoln of Illinois, Rutter, Mt. Vernon and Kieffer for canning. There may be other varieties that would stand in Wisconsin. I think the Hoosic of the east should be tested in Wisconsin. Nurserymen of our state should not be content and think, they can sell any of the above just as well as any other, but should try to produce hardy trees instead of budding 4 to 6 inches above the ground on imported and often tender seedlings; they should get seed from Suduth, Warner and Longsworth, grow hardy seedling and graft thereon, and lay the foundation for a hardy tree in the ground; if the seed can not be had in sufficient quantity at present, then use piece roots for grafting, and get the scion 6 to 8 inches deep in the ground so the scion can send out roots, and stand on its own roots. If the three above ironclads are grafted as above recommended, they ought to stand anywhere in lower Wisconsin. Propagated as above they will some time make hardy trunks for top grafting finer sorts upon them. My experience is that we can grow finer sorts by top-grafting them 5 to 7 feet high on Ironclad trunks, and after growing a hardy and double grafted tree it should yet be sold at a reasonable price. One lady, Mrs. Fuller of Aztalan, told me some time ago that they paid $5.00 for three pear trees and the agent agreed to replace any that did not live; but the trees died and the agent never showed up again. If we would investigate I think we would find many trees where there has a dollar been paid for. Such high prices will prevent many from planting pear trees. If apple trees are sold at 50 per cent profit why can't pear trees be? So it will be an important thing to get prices right. Nurserymen should instruct their salesmen to induce farmers to plant apple and pear trees along the road side, and should permit the traveling public to eat some of them, and they should sell trees for that purpose at wholesale or cost price. We want Wisconsin roads full of fruit trees if possible, if it takes us years to do it. There may be some that don't just know where to plant a pear tree. Would say don't plant it right side of a pathway where the ground is ontinuously tread, as they are not apt to live long on such places, but plant it in garden corners or other places, where the ground is not tread much. In planting lean the trees toward the 2'oclock sun, with the most branches that way to afford shade for the trunk, as the hot rays of the sun are apt to injure the trunks. For orchard north-eastern slope is best. Cultivate for a few years, then seed down with grass, and scatter wood ashes around the trees, enough so the trees will make moderate growth each season. With me blight is much worse on trees that stand in cultivated ground than on those that stand in sod.

If we all do our duties in regard to propagation, planting and caring for the pear trees, I think our efforts will be largely crowned with success, even here in Wisconsin.

DISCUSSION.

Mr. Edwars: You would not recommend people to plant dwarf pear trees?

Mr. Kellogg: Yes, under certain conditions:

Mr. Edwards: What are those conditions?

Mr. Kellogg: If you have got a good clay soil, eastern slope, you might take care of planting the best kind.

Mr. Wilkins: In regard to the dwarf pear, I will say that in Delavan Lake, at the south slope, on a gravel hill covered with sod, are the finest pears I ever saw in my life, grown on dwarf trees, and they have done so three years to my knowledge, every year he has a crop, and they are so heavy that the trees always have to be propped. It has been a perfect success there.

Mr. Kellogg: At Walworth a few years ago a Duchess de Angouleme was brought into the exhibition there that weighed 24 ounces. I went and saw the tree; it was a dwarf tree and grew within a foot of the ground. I am satisfied that the dwarf trees can be made a success, but not with a very great profit. We can grow peaches, but not with a great profit.

Mr. Barnes: I have grown some varieties of pears at Waupaca every year, and I have had fair fruit every year for the past ten years. I have found a little Seckel pear grown in June grass sod that would be absolutely hardy, but of course the trees grow small. It bears every year, very small, but sweet enough to make up for inferiority in size. I think I have grown more fruit on one little Seckel pear tree than anything else I have ever fruited on my farm. Understand, I do not advise everybody to plant the little Seckelpear, but that is the fact in the case of one particular tree. I have fruited Flemish Beauty and Vermont Beauty successfully; I have one beautiful little Flemish tree that bears from one to two bushels of pears every year for the last three or four years.

Mr. Moyle: While I have always been called a pear crank, yet I am going to advise you to go slow on pears, and do not plant dwarf pears, because the plant is not hardy. While you may have a little fun growing pears in the garden, do not go into it on a large scale. The winter of '99 killed everything I had in dwarf pears with a quince root; do not plant pears on their own root; plant a few hardy pears, but do not go into them heavily.

Mr. Kellogg: We do not have such a winter as we had four years ago, in a lifetime but once. They will not kill out unless they have a dry root freeze. The quince is all right if you keep it covered up right. Lo not set a pear tree unless you wrap it up from the ground up, and in the fall wrap it more, wrap it with the limbs, and I will set dwarfs and I will make them bear, or die. I will have a dozen varieties of pears on my trees next summer.

Mr. Gibbs: They do not claim to do much in raising pears up in Minnesota, but at Reed's Landing, and at Lake Pepin, on the north slope of the Wisconsin Bluff, I found a group of Flemish Beauty pear trees in the fall of 1883 which were 20 feet high, had been bearing for a number of years and had gone through some of our intensest winters and were bearing good crops.

Mr. Thurston: I have no wish to boom the Sudduth pear. Mr. Kellogg says, it is about the size of the Seckel, and I think Mr. Kellogg is mistaken, the Sudduth pear is about the size of an apple, that is, shaped something like an apple, it is a roundish pear. I have eaten a great many right from the old tree. A few years ago a party of editors went down among those trees, and examined the whole proposition as to the Sudduth pear. We all came back believing that there was a great future in the Sudduth pear. It is a pear of only medium quality, but a prolific bearer. The old tree was about 80 years old, and another gentleman and myself tried to put our arms around it; our fingers touched on one side, but not on the other side by about six inches, so you can see the size of the tree. That tree at that time had on it about 25 bushels of pears, about the size of that apple. Now had that tree been pruned and properly cultivated, it would have been the size of a pear. We visited quite a number of trees that were 50 or 60 years old; all the trees in that locality had disappeared except the Sudduth. We visited old man Sudduth's place and there were some trees 10 to 12 years old, making beautiful shade trees; I do not know of any better shaped pear tree than the Sudduth. I have no interest in the Sudduth pear; I think it will take the same place among pears that the Ben Davis has among apples.

Mr. Converse: I feel Mr. Schulz did not give full credit to the Kieffer pear that it deserves. For beauty of foliage, vigor of growth, freedom from blight and early bearing it takes first rank. It is one of the best canning pears that is grown. I have seen it grown most freely of any pear in southern Wisconsin, and I think if there is only one pear planted, a person makes no mistake in planting that.

REPORT OF COMMITTEE ON RESOLUTIONS.

Whereas, The office of the Wisconsin Horticultural Society is to improve conditions as we find them, therefore be it

Resolved, That we are glad to find in Prof. J. W. Livingston a strong ally and an active worker in bringing about these conditions and that we wish him God speed in his noble effort to raise the standard of citizenship among the youth of the state and we hereby extend our thanks for the very able address given the convention.

Resolved further, That Prof. Livingston be made an annual honorary member and that a copy of these resolutions be sent to him by the corresponding secretary.

L. G. Kellogg,
D. C. Converse,
William Toole,
Committee.

Whereas, Our beloved brethren J. S. Stickney and F. K. Phoenix by the infirmities of age are unable to meet with us,

Resolved, That we extend the New Year greetings of the Wisconsin State Horticultural Society and that the corresponding Secretary communicate these greetings to them.

Be it *Resolved,* That this Society do and does hereby appropriate and set aside one hundred and fifty dollars annually to be expended in the payment of premiums on fruits, flowers, vegetables and seeds to be exhibited at our annual meetings, and that

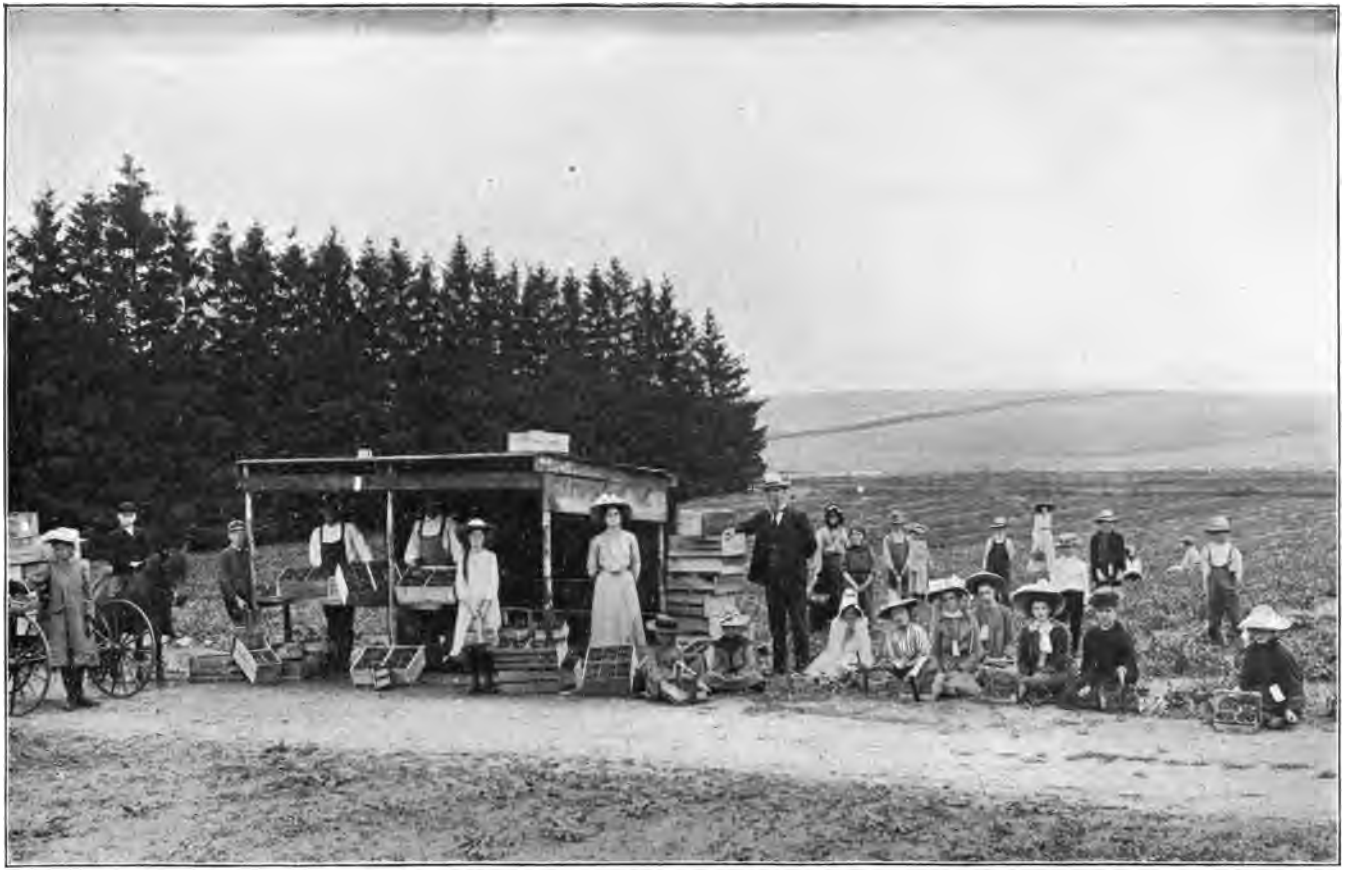

Fig. 7.—Strawberry pickers at fruit farm of Delbert Utter, Caldwell, Wis.

the said sum of one hundred and fifty dollars be divided as follows: Fifty dollars for the summer meeting premiums and one hundred dollars for the winter meeting premiums.

Further be it

Resolved, That this resolution shall be in effect and force from its adoption.

Whereas, The rabbit is one of the most destructive animals to our orchards, nurseries, gardens and crops that we have in Wisconsin, therefore

Resolved, That the Wisconsin State Horticulturists now in session do most respectfully request the Honorable body of the State Legislature of Wisconsin now in session to so revise the present game law that the rabbit be stricken from the list of protected animals.

Whereas, The various states of the Union are making elaborate provisions for representation at the World's Fair to be held in the city of St. Louis, Missouri, in 1904, and,

Whereas, It is the sense of this Board that the State of Wisconsin should make adequate representation of her resources and industries at that Exposition, and

Whereas, It appears that the appropriation heretofore made by the Legislature for such purpose is not sufficient, therefore be it

Resolved by the Wisconsin State Horticultural Society that the Legislature of Wisconsin be, and is hereby, REQUESTED TO APPROPRIATE THE FUNDS NEEDED by the Wisconsin State Board of Managers of the St. Louis World's Fair, in order that the Manufacturing, Mining, Live Stock, Dairy, Horticultural, Agricultural, Educational, Fisheries, and all other Wisconsin interests may be worthily represented.

Resolved, That the thanks be extended to Supt. of Public Property Bryant for courtesies shown during the convention.

Resolved, That the thanks of this Society be extended to President Loope for the fine apples contributed to the convention.

Resolved, That the thanks are due and are hereby extended to Governor La Follette for the interest he has manifested in providing our Society with a permanent office and library room.

On motion, the report was adopted.

THURSDAY EVENING SESSION.

MEMORIAL SESSION—E. S. GOFF.

Rev. E. J. Updike: Prof. Goff was a man who not only believed in a spiritual religion, but he was also a man of loyalty to the things that he believed to be right. There was not money enough in the wide world for which he would have exchanged his honor. He was loyal to the great principle underneath his life, and it was this that caused him everywhere to be loved and respected, and he was a public-spirited citizen. He did not lead a selfish life, he had interests outside of the particular work in which he was engaged. He was devoted to his profession, but he was a citizen of the state of Wisconsin and the United States, and he was interested in public questions. He was profoundly interested in many of the great moral questions and social questions, and he was not only interested in these things, but he was willing to give time and money to help in carrying on these different lines of work, in order that there might be success. And therefore I say, he was an unselfish man.

Prof. Goff was not a man who said very much, not a man of ostentation, he was not heard for his much speaking. The mightiest forces in the world are the quiet forces that work without noise, that work in silence, and so this man, simply attending to his work as a professor of the University of Wiconsin, and as a citizen and as a member of his church—for he belonged in the church, the Christian church, and was always in his place, and believed that the great principles that were back of his life and under it could best be expressed and that the public could best be educated by this great instrumentality—and the faithfulness of the man in all these relations, in his home and in public and in his profession, whereaver he was, these are things that made him the man he was, and that caused him to leave such an impression upon this community, and the forces which he has started are forces that will be permanent and that will continue on for years to come.

Prof. W. A. Henry: A large body of German farmers who are at this time planning to visit America for the purpose of studying its agriculture, in corresponding with a German minister in Washington, specified that in the arrangement of their itinerary the Wisconsin Agricultural college should be visited. Now why did those men in a far-off land choose the college here on the hill for one of their objective points? That college si endowed with less means and has a smaller force of workers than some other agricultural colleges in the immediate vicinity, and yet it is picked out as one, perhaps the only one, that those German farmers will care to visit.

If you will go back with me and remember how our institution was organized—we started with the chemist, Dr. Armsby was our first chemist, Dr. Babcock succeeded him. The second man was Prof. King, the third was Prof. Goff, and those men, with one or two others, made up our little agricultural faculty for a long time, and that group of men working together gave this agricultural college a direction and an impulse which projected it into the present and more prosperous condition. The forces that were stored up in those men worked themselves out quietly, but persistently into what we now have as the whole fruit, or at least the blossom, while the early work was the bud.

In coming to us, Prof. Goff came from the same station as Dr. Babcock. The head of that station was a man of strong, peculiar scientific attainments, and he did a great deal to help develop those men, and both came to us pretty well developed. I think if ever a body of men worked together with absolute devotion, always sinking self, always having in mind the one purpose of pushing the college forward in the interests of Wisconsin agriculture, it was that group of men. There was never any bickering, never any quarreling, there was never any diversity of purpose. No man tried to laud himself, no man tried to gain the advantage over his fellow in the work, and I do not think that the history of a single educational institution in America can show more of that than could our agricultural college, and practically can do it today.

There was a peculiarity in our work, that both of those strong men were not college graduates, both had studied very considerably with teachers, but Mr. King and Mr. Goff were both largely self-made men. Mr. Goff became very considerable of a scientist through his exertions as a student. For example, he felt that in order to perfect himself more in horticulture, it was necessary that he should read the horticulture written only in the French language, which is very voluminous and very important, and consequently he took up the study of French and advanced himself until he was able to read all that he desired or found time for in the French. In botany he became a good, systematic botanist. Only a short time before his death he went down to the University of Chicago at his own expense and had special training, and some of his last work as a horticulturist we know was brought out as a result of those studies, and he was still prosecuting those when he left us.

As a teacher I felt he was a man who never was half appreciated by those that took the work under him, because of his solidity, his quietness, which were naturally exceedingly effective, but not flashy. Mr. Goff was exceedingly methodical in his teaching; he was a pedagogue, in many ways he was a systematist. His work was laid out with absolute system. You could tell Monday of this week what he was going to do Thursday week after next from his schedules, both as to what he was to teach and how he was to teach it. He was a man who fed his students pretty steadily on pretty solid food and he as always in dead earnest about it, but he was a reasonable man, and while there was nothing light or trifling about his work there was moderation in the amount of material that he put before his students,—something that many professors are not wise in regard to. He limited the amount of material that he expected his students to mentally swallow and mentally digest.

He loved plants, his heart was wrapped up in plants and in profitable, useful plants. He was more than a horticulturist. He taught his students in regard to many plants outside of the direct domain of horticulture, and that teaching was not only personal and for the class before him, but he had in mind all the time the working out of the subject he was teaching—he was an evolver of the branch of horticultural pedagogics. When Prof. Goff began his instruction to the little group of boys over there, there was hardly a school-book on horticulture.

He wrote out with his pencil the scheme that they should follow; he had to have that mimeographed and then had it put in print for private use, and it evolved after a time into that book, "The Principles of Plant Life." Hewas at work later upon another book which was being evolved upon a very unique system. He wished to work at something for the rural schools. He wished to write something that the ten-year old boy or girl in the rural school could use, and he was in touch with a number of school teachers teaching that kind of pupils, and was sending those sheets that were run off on the mimeograph with directions what material they should apply, what illustrative material. Then these teachers would give these daily instructions and ask the pupils certain questions later to try if they understood the subject, and worked it out more fully. He was at work doing that at the time he passed away.

It does seem a tremendous loss, when we think of how young he yet was; how much he had already accomplished as a pioneer, and how much he would have accomplished had his life been spared to a reasonable period of existence with us.

In his personal characteristics as an associate we always found him patient; he was patient with others even more than with himself. His impatience with himself was sometimes rather marked. On more than one occasion he came to me and, drawing his hands across his head, he said, "Professor, I must quit, my head bothers me, I am in pain, and I am not keeping up to the standard here of your requirements, I want to resign, I want to drop out of this work." "Well," I said to him, "now you are feeling blue, your head is hurting you, let us not talk about it, let us wait, we will talk about this some other time." That thing occurred on several occasions, and later I would find that he had plucked up courage again and gone forward with his work, and that leads me to say that he was a man that accomplished a great deal that he did accomplish with considerable physical suffering. Prof. Goff suffered a great deal more, physically, than his pupils ever dreamed, and only those that were intimately acquainted with him and knew his peculiarities, could realize how much physical pain the man endured in carrying on his work. He was never complaining, and only at times of deep depression did he give way, as I have indicated, all of which shows you that he was human, like the rest of us.

I always wished that his pupils could appreciate him as they ought to. That is my keenest regret today. I know that his associates in the faculty all feel his loss. The farmer boys that came here, and there are a great many in front of me, and that is the reason I speak as I do, the farmer boys that come here, I have often thought, little appreciated the character of some of the men that stood before them day by day. A farmer boy comes here, and he has had a country school teacher, perhaps a good teacher, perhaps not. He has never been where he has had a chance, in many cases, to size up men, and so some of these strong men, after all, do not seem to be much different to him; he does not discriminate; he is careless. I think our boys are fully as good, and above the average in good-heartedness, but I think that they often fail to show to their teachers that appreciation which men of that grade really are entitled to. I wish we could cultivate a spirit more akin to reverence for our teachers, our masters and our leaders!

Mr. Goff, and I think I can say it as no other man can, excepting one or two of the older associates, was a man absolutely without personal ambition, as the world commonly understands it. He was a man that pressed hard against the collar of work, and was always trying to accomplish as much as he could along his chosen lines, absolutely regardless of advancing his own name among others, and in that he set a splendid example, and this meeting to-night is a testimonial that would not have come to him had he chosen to conduct himself differently.

While the faculty feel the loss of the man as no other set of men can, I do believe that among the young men scattered over this state, that the example of that man will brighten their lives, and as they sit at home at the fireside, as they are in their fields, at their work, as they come to have to do with the affairs of the village and the community, they will be led by the impress that his character made upon their to better citizenship, to faithfulness in their duties, and especially to modesty and humbleness in all that they do, not puffed up, not vain-glorious, but simply getting happiness out of good, hard, honest work.

PROFESSOR GOFF AS I KNEW HIM.

I cannot recall just when or where I first met Prof. Goff, but somehow there grew up between us, through the associations of business, temperance and church work, a bond of sympathy that strengthened with passing years. I did not know him in his home, nor in his study, nor yet in his profession as a part of the teaching force in the University, but I knew him outside of all these as a man among men, and as one whose supreme desire was the accomplishment of good.

He was one who felt that he was not to live in vain. He had a work to do and he would try to do it well; a niche to fill, and he would endeavor to so fill it that there should be no lack.

Prof. Goff was a man of his word. If he made an appointment he kept it with scrupulous punctuality; and his aid, both by counsel and by financial contribution, could be counted upon in every cause which, in his judgment, had for its legitimate result the bringing nearer the day of better things in civil, political and religious life.

He was a man with a kind heart. I never saw him ruffled in temper in the least; yet he always impressed me as one who had a mind and judgment of his own and was in full consciousness of their possession. His quiet nature never permitted him to intrude his opinions where the only result would be to provoke heated and unprofitable discussions. When he spoke there was an earnestness about the word that seemed born of conviction, and the hearer was impressed with the thought that he was not listening exactly to theory upon the subject in hand, but to words of practical import emanating from one who was ready both to bear his part in action to further the interests he was represesting, or contribute financially to their support.

Prof. Goff was not a recluse, yet he loved his work in the University, and devoted extraordinary energy to meet the demands it made upon him. One of his physicians said of him that he exhausted all the forces of his nature daily in his work, and had none left with which to combat disease. In spite of the time and effort spent in connection with his work at the University he found time for effort in many directions looking toward the betterment of the conditions surrounding others less favored than himself.

He was an opponent of the saloon, and wished to see it removed from the vicinity of the University, and then from the city, the state and the nation. He was not immoderate in his views; with him the moral sentiment of the people must be brought up to the proper standard, and he was in favor of a continuous agitation of the subject for a period of years until the voter should say at the ballot box, "no saloons." His anti-saloon sentiments found voice in the meetings of the Madison Temperance Board, a body of which he was a member for several years before his death. He was ever an earnest, faithful and persistent worker in the cause, fertile of resources, efficient in counsel. When for any reason he was unable to be present at the meetings of the executive committee it was felt by those in attendance that an element of strength was lacking. But it is not by one's attitude and achievements in professional and philanthropic work only that we obtain insight into the character of others and learn to know them as friends and co-laborers in the prosecution of the various enterprises ever ready for those who are willing to work. We look to the businesss side of the individual to give us glimpses of the real man that can not be seen from any other point of vision. Prof. Goff had a well developed business side to his character. Like most other men he appreciated fully the material things of this life. With judgment guided often by the experiences of others he bought and sold, buying where the prospects of gain seemed certain, and selling whenever those gains could be realized, but always in the strict channel of legitimate transactions with the whole over-shadowed by the golden rule.

In his accounts he was methodical, painstaking and careful. He paid his debts to the last penny, on time, too, and exacted a receipt therefor to be filed away as evidence to posterity of a closed transaction.

As administrator of his estate I have been compelled to do business with those with whom he did business, to investigate closely his methods of transaction, and trace the history of his dealings with men under circumstances where the inner nature comes to the surface and they are seen as they are. I wish here and now to record testimony to the effect that in the accumulation of a reasonably large estate no evidence is found any where that casts a shadow upon the honor, integrity or purity of manhood of him whose life is passing in review before us.

The life was brief: yet it was longer, accomplished more for humanity, and shed a brighter light upon the pathway of others than the life of many another one who has been permitted to extend the period of earthly existence even to a point beyond the allotted three score years and ten.

He lived not in vain. He did his work and has passed from our sight, leaving to posterity the results of his efforts as teacher, investigator and author, and to those who knew him in his daily walk an enduring example of the purest of Christian manhood, the contemplation of which does us good, and inspires us to an endeavor to adorn our own lives with virtues such as his that make the world better.

C. F. CRONK.

Mr. A. J. Philips: My first acquaintance with Prof. Goff was at an institute at Brodhead,—I think it was the first institute at which he had ever talked in Wisconsin after he came here. He brought a chart there, showing a vegetable garden, something he had taken great pains to prepare, and a man there said to me, "There is a young man I never have seen before, but he is going to make his mark." There was something in the man that impressed you with his sincerity, and that he believed what he was talking about.

Now I will tell you what I said to my two boys whom I sent here to Madison. I told them on leaving home, "As soon as you get to Madison, find Prof. Goff, get acquainted with him." I knew there were places here in Madison where they might be led astray, but I felt that any advice or any directions that they received from Prof. Goff would be all right.

I have been intimately in Prof. Goff's company alone for about two weeks, while we were out to locate a trial orchard, and there was never anything said or done by Prof. Goff while we were out together to indicate that anything that he was doing was of a selfish nature. It has been truthfully said here that his work was along the line of helping others. I want to say to you, young men and old men, professors and preachers, that it will be a long time before you will have a man here in any position in Madison connected with the university or capitol or anything else, that will spend the time that Prof. Goff did, that he did not need to spend at all, his salary did not cover it, but that he simply did out of Christian kindness. You would find him here on Sunday morning, when young men began to come to town to attend the winter school, and he would go to the different hotels; I have seen him there a score of times, looking for new-comers, looking for young men that were coming here as strangers, that might fall in with bad influences; leaving his home and his family, when he would better have been resting at home, if he had consulted his physical condition, but he did not do that. His Christian kindness took him here to the hotels to find young men that had come here that needed to be started off right, putting printed matter in their hands, telling them where there were going to be Christian services that day and that evening, and where there were Sunday schools that they could attend if they wished to, and where there were Young Men's Christian Associations, and I might multiply those instances.

I wish to say to the young men, you who have been in Prof. Goff's classes, you study and find out what kind of a man Prof. Goff was—it is easy enough to do that, talking with his associates here, and listening to what has been said about him, and you will make no mistake in laying out your plans for your future life and for your future habits if you will try to imitate the example that has been laid down for you here in Madison by Prof. Goff.

Now we have lost a very old horticulturist, and I was going to speak of Mr. Dart. Mr. Dart was a resident of this state; he commenced his horticultural work in this state in 1856; he was a life member of our society, and after he removed to Minnesota to take charge of their experimental orchard he used to come over and attend our meetings, and he always had an anxiety and a desire for the success of this Society. Wisconsin really was his horticultural birthplace, and we had made him a life member.

I went last June and stayed a couple of days with him; he was quite feeble then; he could drive then to the orchard and would hold the horses while I looked around. He was not able to go to the Minnesota meeting, so when I went there I stayed a day and a night with him in December. His daughter was there when I went in; he could not speak my name, but he talked a little, and he asked about the meeting there and said he wished he could go, but he asked his daughter to get his old diary for me to read, and said I would get more comfort out of that than if he could talk to me, and I read the diary all forenoon. Mr. Dart, all through his life was opposed to the saloon, as was Prof. Goff also, but Prof. Goff was different from Mr. Dart. Mr. Dart had this bold, pushing way, he wanted to get the saloon out where he could stamp on it and put it out of existence in a minute, and with that disposition he made quite a few enemies around the town where he lived, but he had some excellent traits, and the state of Minnesota will miss him, and I presume there will be a memorial service next winter for Mr. Dart.

By Prof. Cranefield.

My Dear Friends and Fellow Horticulturists:

We are assembled here tonight as is our custom to pay tribute to those who have ceased to be with us and have moved onward into the great unknown.

Our friend and associate Prof. E. S. Goff died June 6th, last; died as I think he wished to die, in the midst of work. From his earliest manhood days until the end he had worked to the full limit of his strength, worked unceasingly and to have been compelled to drop the burden and sit inactive, waiting, perhaps hoping for death would have been, I am sure, a grievous burden to this active mind. The close review of the professional work accomplished by Prof. Goff that I present here may be wearying but it has seemed to me fitting that a record of the achievements of this untiring worker in the field of horticulture should be handed down to future generations.

Emmet Stull Goff was born at Elmira, New York, on Sept. 3d, 1852. His boyhood days were spent on a farm and in attending the public school. In 1869 he was graduated from the Elmira Free Academy. During these periods and for a short time following he was associated with his father and brothers in fruit growing, tobacco growing and other farm work. In the winter of 1880 he accepted the position of associate editor of a then well known agricultural paper but finding this work unsuited to his tastes he returned to the farm. In 1882 he accepted a position at the New York Experiment Station but then recently established.

The Science of Agriculture was then in its infancy. Especially was this true of horticultural work. The first work taken up by Prof. Goff was the much needed classification of garden vegetables. Vilmorin in France after years of patient effort had succeeded in classifying the multitude of forms of vegetables and eliminated synonymous names. A similar classification was needed in America and it was this task that occupied Prof. Goff's attention for nearly four years. A momentary glance at the recorded work leaves one amazed. Not hundreds but thousands of varietes of vegetables were grown, described in minute detail and a scheme of classification arranged for each species. In one year we find described 56 varieties of onion, 65 of tomato and 86 of peas.

In connection with this we find records of extensive investigation of the root system of plants, the first recorded work of this kind. Experiments were begun at this time in plant-breeding, one of which was continued for fourteen years. At this time, 1885, the science of spraying was wholly undeveloped. Lodeman says: "Little was known in this country regarding the treatment of fungous diseases of plants by liquid applications previous to 1885. Saunders and Goff were the pioneers in this work. It is also a matter of record that the first regular Experiment Station to publish results of the use of Paris green for controlling the Codlin moth was the New York Station, the first systematic trial of this valuable remedy was made by Prof. Goff. The records of experimental work in spraying in the sixteen years following shows Prof. Goff as associated with every important advance in the use of insecticides, fungicides and spraying apparatus. Two of the most valuable devices for the control of insects known are the kerosene attachment for spray pumps and the cabbage plant protector. Of the former Lodeman says, "A device for mixing kerosene and water has been invented by Prof. Goff and during 1894 the Nixon Nozzle and Machine Co. offered it for sale in connection with the Climax pump, and other firms attached it in a modified form to knapsack sprayers." The device for protecting cabbage plants from attacks of the cabbage root maggot is used by market gardeners in all parts of the United States and is recognized as the most effectual means of combating this insect.

The first systematic experiments for the control of the apple scab were conducted by Prof. Goff, using hyposulphite of soda and sulfide of lime. A very large number of other experiments are recorded. The reports of the work done at Geneva by Prof. Goff has been compiled in one volume of 794 pages.

In 1889 he came to Wisconsin to take up the work under new conditions and it is at this point that my record might well end, for his patient, untiring labors here in the interests of horticulture are well known to all of us; yet that others may read in our records when we, too, have ceased our labors, I beg permission to recite a part of his scientific work while horticulturist at the Wisconsin Station.

From 1889 to 1900 the following subjects were reported by him in bulletin form:

No. 20, Noxious weeds of Wisconsin.

No. 22, Report on potatoes.

No. 23, Prevention of apple scab.

No. 34, Prevention of apple scab, Downy mildew, brown rot of the grape, potato blight and the smut of wheat and oats.

No. 35, Insects and diseases injurious to cranberries.

No. 37, The Russian thistle.

No. 39, Noxious weeds.

No. 43, The horticultural features of a portion of Wisconsin.

No. 45, Apple culture.

No. 50, The hot water treatment for the prevention of smut on oats, wheat and barley.

No. 63. The culture of native plums in the northwest.

No. 72, Small fruits in Wisconsin.

No. 76, Noxious weeds of Wisconsin.

No. 77, Some results of the February freeze, 1899.

No. 87, Native plums.

In the annual reports for these years appear numerous subjects, many highly important.

In reviewing his work here the following subjects appear:

The study of various fungous diseases, particularly the apple scab.

The improvement of spraying apparatus.

Extensive work in plant breeding with special reference to the influence of immature seed on growth and fruit production.

Variety tests and breeding experiments with the strawberry extending over seven years.

An exhaustive study of the development of plants.

Experiments in pinching the growing shoots of the raspberry.

In 1898, after several months of preparation Professor Goff began what he esteemed the most important work of his life, an investigation of the early development of the flower buds of certain plants. The orchard fruits were mainly considered in this work. This task remains unfinished. The very last work done by Professor Goff was the preparation of material for examination in tracing the development of plum buds.

Although but fairly begun this work had attracted the attention of scientists in every country.

In addition to all of these experiments, the routine of office work and as much of teaching work as is done by the average university professor he yet found time to write the three valuable text books that rank with the best that have ever appeared.

The Principles of Plant Culture has been adopted as a text in several agricultural colleges, while Lessons in Fruit Growing, a later volume, is steadily gaining ground in the same direction.

His unfinished work "First Lessons in Agriculture," will, when completed, undoubtedly be generally accepted as the standart text in elementary schools.

Nor is this all of the literary work to be recorded, for during all these years scarcely a week passed without a contribution to some horticultural publication.

These writings if collected would fill a large volume, and all are valuable for Professor Goff was never a "space writer."

The record would still be incomplete without mention of his unpublished works. These include an extensive bulletin on the potato which was intended to cover the whole field of culture as well as a critical study of the plant from the standpoint of the botanist and plant-breeder.

Among my most highly valued treasures is a collection of unpublished papers by Professor Goff covering a wide field of investigation.

Of his work in this Society others are more competent to speak. That it was characterized by the same earnestness and unselfishness that he displayed in his professional work all of you know.

I have thus far spoken only of Goff the scientist, have outlined crudely his life's labors with much left unsaid. Of Goff the man, the associate, the friend, I have said no word and I feel that here I should cease, for there are others here who will from the fullness of their hearts, as the recollections of their association with this kindly man flood their memories tonight, tell you how he lived and how the example of this pure and gentle life has so widely influenced theirs and of all whose great pleasure it was to know him.

The high esteem in which he was held by his fellow townsmen was well expressed by Doctor Wilder of the State Journal as follows:

"He was a pure minded man—the wholesome elements of his fruits and flowers seemed to enter into him. Retiring in his spirit, his independence of view was yet by no means qualified; and in the championship of all things that were good, this delicate, modest man had the bravery that the unthinking associate solely with the battlefield. Professor Goff wanted always to be counted where there was a good war going on. He contributed disproportionately to the feeble causes that dragged because the crowd do not heed them; and whenever the standard of temperance or of other reform, however lowly its auspices, was set up the scientist-citizen took his stand and to it brought the weight of his influence.

"It was good to have known him. His life and thought were of the things that concern men, but they were wrought out in a soul singularly serene, unselfish and lofty."

There is again a reason why I should not enter here for when my thoughts go back to the time of my first meeting with him yonder on the University Farm, and travel over all the years to now, when I aim to recount how much of good there was and how little of evil in this life my words seem but weak and halting. Yet, I would not wholly refrain for while there are many here who knew him longer none could know him better. For nine and a half years I lived in daily companionship with Professor Goff, but such was the reserve, the stern application to the duties of the hour that many of these years passed before I learned really to know any other than the dignified, conscientious, yet kind, superior who would tolerate no lapse of duty or be satisfied with less than an honest performance of the task allotted.

But as the years passed and the daily grind of labor was often closed by the exchange of thoughts in other fields than horticulture, by the informal chats of home and the boyhood lives of each we drew gradually closer together and I learned to know this kindly, modest, gentle nature as but few of you may have known it. For years as I saw him struggling under a heavy load and silently fighting that terrible foe to success, to pleasure, ill health, I knew what an unconquerable spirit was his; when he suffered the blow that deprived him of his companion and helpmeet and left to him a motherless boy I knew, although the many who met him were not permitted to know it, what deep suffering was his; when he died and not till then did I know that I had lost a true friend.

Mr. Gibbs: I would like to speak of the services rendered by Prof. Goff to the people west of the Mississippi river. When Prof. Goff undertook the investigations, the improvement, the dissemination and the announcement to the people of the value of the natural resources they had in the northwest country. in the native plum, he immediately attracted the attention of the constituency extending from the Mississippi river to the foot-hills of the Rocky mountains, and the farther west the knowledge of his work extended, the more important it became. Twice within the last five years he has been invited to come to the state of Minnesota and communicate to the people there his knowledge of the value of the native plums. He immediately placed himself in touch with that large constituency; they never knew much of his personality, because he was not a man often seen abroad, but they did realize the value of his work and of his services to them, and I should not have felt satisfied with myself, having lived a longer time in Minnesota than in Wisconsin, and having lived twelve years in South Dakota, should I not have asked the privilege to lay this additional wreath of honor, gratitude and appreciation upon his grave.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

SUMMER MEETING.

OMRO, THURSDAY A. M., AUGUST 27, 1903.

The meeting was called to order by President Loope, after which Mr. Irving C. Smith pronounced the invocation.

ADDRESS OF WELCOME.

Mr. G. W. Rhodes (president of village of Omro): In behalf of the public officials of the Village of Omro, I give you welcome to our midst today. We feel honored to have the State Horticultural Society meet with us. Of course the weather is bad outside, but it is nice and comfortable within, and it seemed to me as I sat there, that it would pay almost any one to face the storm and inconvenience to get here, just to see the beautiful fruit that you have on this side and the flowers on the other side. I did not suppose there was as much fruit to be gotten together as you have here.

When the program was first given to me, the question arose in my mind why the State Horticultural Society comes to this town. I knew it was not because we had the best hotels, the greatest railroad facilities or the finest public buildings, but it resolves itself in my mind into this: It is because we had a horticultural society in Omro that is alive, awake to their own interests and the interests of Omro, and I think honor is due the Omro society, members and officers, for having you here today.

The program says that those speaking are requested to be brief and to the point, and as I am to be followed by Dr. Loope, and he is quite a talker, I will close by offering you the best there is in Omro.

The President: In reply to the address of welcome I had not in mind any fine phrases, I have not even formed a particular line of thought. He said we can have everything good there is in Omro and we are perfectly willing to take it, and I think that would be characteristic of all horticulturists, they are willing to get all the good they can and if it is offered, they are willing to receive it from other people, but they sometimes have to get it for themselves. That is what a great many of us are trying to do.

There are a great many things before the State Society at the present time that are somewhat different than they have been heretofore. We have coming in another year the fair at St. Louis, which this Society has prepared for and for which we are allowed $5,000 by the state board of managers of the Louisiana Purchase Exposition.

We have also a further and wider field of action, somewhat, than we have been used to having, for the reason that the statehas been quite liberal and has given us an additional annual appropriation. I think that the state of Wisconsin and all lovers of fruit and flowers should feel very grateful to the legislature for their kindness in giving us this additional appropriation, because we intend to use that for the good of the whole state; we want to make the best possible use of it. We may be mistaken in some directions, but we aim to do the best and to do it at the least possible cost. We have already extended our trial orchard program by arranging for another trial orchard about twenty miles this side of Superior, at a place called Poplar, in Douglas county, and we also have in thought the idea of extending the trial orchard experiment into the extreme northwestern part of the state, to places yet unknown; we want to extend our field of usefulness over the whole state. Until very recent years you are well aware that the northern part of the state was not supposed to grow fruit beyond what grew wild, except in certain favored localities like Green Bay and Sturgeon Bay and the lake shore, but we are trying to disprove that, if possible. We may fail. If we have failed, then we have given a lesson which is as essential as though we had succeeded, because we can show people what they can do and what is not possible.

For the meeting here,—we always have a good time in Omro, the Omro people generally take hold. As the speaker said before me, the reason we came here was because they have got a live society here, which is a fact, and we always know that Omro is ready to do something. Time is pressing, and while I have a great many things to say, I will stop.

The presidnt then appointed the following committees:

Flowers, Jonathan Periam.

Fruit, L. G. Kellogg.

USE OF HOT-BEDS FOR GROWING PLANTS.

Irving C. Smith.

Mr. President, Ladies and Gentlemen:

For hot-beds select a location that has the full sunlight all day and is protected from the severe winds, either by buildings and trees or a tight board fence six to eight feet high, built for the purpose.

To build the frame, dig a trench east and west, or as nearly so as possible, about one foot deep by seven feet wide and of length to suit your needs or space. For the back, set cedar posts on the north side about 3½ to 4 feet apart according to the length of lumber, and 2½ to 3 feet deep so as not to heave or sag with frosts and outside pressure. Be careful to set posts true to line and perfectly plumb, as it is important that the back be straight. Board with common or matched lumber from the top down, the top board 40 inches from bottom and on a level line. Then nail a six inch strip over the boards four inches down from top to carry the 2x4 cross bars.

The front side should be 14 inches lower than the back, that is 26 inches high, with the strip to carry cross bars two inches below the top; or if you use surfaced 2x4 for bars, a little less space is required, so the top of bar will be flush with the top of front board. This gives a slope of one foot to glass. The width of bed from inside of back to outside of front should be 71½ inches measured on the incline, to suit a six foot sash. This allows half an inch projection to lift sash, which is quite necessary in cold weather as they are often frozen down solid on the front side and must be loosened with grub-hoe or chisel when necessary to move them. The end boarding should be even with the back and two inches above the front to make it even with the upper surface of sash. Fill in the outside to level of ground with sawdust or some coarse material, if at hand, if not, use earth. All this work must, of course, be done before winter.

After over twenty-five years of experience the writer prefers sash six feet long over all, with three rows of nine or ten inch glass. Have two inch rims all around; not the wide six inch piece at the botton, as no plants will grow under it. This gives you sash 32 to 36 inches wide which may be handled by one man, but can not be so handled if they are much larger.

By using the 2x4 scantling for cross bars to carry the sash, you not only close up the cracks between the sash, but have bars of sufficient strength to walk on in caring for bed. Cut the bars at a proper bevel on both ends and of even length (70½ inches) so they will fit, either end at top, at any place in bed. A common carpenter's miter box of large size is most convenient for cutting bars.

Having gotten the frame ready in the fall, as mid-winter comes you must prepare to plant. Get fresh horse manure with a moderate amount of bedding in it, either straw or strawdust, both preferred, and pile it up to heat. A small amount of cow manure mixed in is not objectionable. In two to six days it will be quite warm, then it is time to put in the bed. If you can get manure from a pile that is heating you can save the extra handling. The more or less common idea that manure must be allowed to heat for a number of days and be handled over two or three times to get the greatest heat past before it is fit to use in a hotbed, is no more necessary than it is to open the doors and windows of your house in winter to let your coal stove or furnace cool off some before the heat is fit to warm your house. Both are wasteful and not good business policy.

Board up the outside of bed and fill space with some dry material, or, it may be filled with manure as bed is made. Clean the empty bed of snow and ice and fill with about 16 inches of the warm manure, being careful to shake it up well so as not to have it lumpy. Tread it in evenly, not too hard or it will not heat properly, and not too loose or it will settle unevenly. Go over it several times as it is being put in, so as to leave it in a springy condition, neither solid nor loose. If the bed is more than a few yards long, do not fill the full length at once; but work gradually from one end keeping bank of manure sloping so as not to have it settle in sections.

Next comes the soil, which should be about five inches deep. The soil dug out in making the frame should be saved for use here, if of desirable quality. But if not some other very rich soil should have been provided. The pile is frozen solid and must be loosened with pick or mattock. Just imagine you are digging gold in the Klondike region and it works all right. Throw the frozen ground in the bed in chunks of whatever size is convenient, put on the glass and cover with quilts made as follows: Get the heaviest grade of common unbleached white muslin and cut it fourteen feet long. Sew three breadths together for one quilt, fold in the middle and you have, when made, a 7x9 quilt. Use about seven pounds weight of medium grade cotton bate for one quilt and tie about six inches apart with best grade of grocer's wrapping twine, same as common bedding. In sewing goods together make lap seams with double stiching using coarse cotton thread. This seam will not rot out nearly as quickly as the common seam used in bedding. In tieing be sure to leave the ties quite slack so you can easily run your finger under the string. This will lengthen the life of the tie several years.

To keep the wind from blowing the covers off the bed, use common 4 foot slabs from the saw mill, or pieces of board, laid on lengthwise the bed, three pieces at each lap of quilts. The life of the quilts described, if used all winter and with reasonable are, is ten to fifteen years. You should have a pole set up on posts, instead of a line to hang the quilts on. Use 2x4 with one edge rounded a little or saplings from the woods for this purpose. The objection to a line is the wear on the quilts and the sag which makes it difficult to use them when frozen, while on the pole they freeze flat and will open like a hinge.

If you have prepared your bed properly it will be ready for seed in three to five days when it will be steaming freely. Take quilts off and remove only a few sash at a time, to avoid loss of heat. With a six-tined fork shake up the ground thoroughly and it should be a loose mellow bed in just the right condition of seeds to start quickly and grow rapidly. Rake finely and evenly. A marker similar to a wooden hay rake, only instead of teeth put little boat shaped runners four inches apart is convenient to make rows evenly and half an inch deep. Sow the seed, smooth over the rows to cover, press a little with a handled board one by two feet; or sow seed broadcast without rows, rake lightly and press, cover with sash and quilts and seed is ready to grow. It is unnecessary to give light before plants appear. In three to five days plants will begin to break ground. Extreme care must be taken at this time and on, or you may lose all your work in a few hours time. The plants should have all the light possible, so the quilts must be taken off in the morning as soon as the sun gets on the beds if not very cold, but if down to zero or below it may be necessary to wait until nine to ten o'clock before uncovering. If sun is bright the glass will gather sufficient heat to be safe even at 20 to 30 degrees below zero. Often frost will begin forming on the under side of glass almost immediately after it is exposed, but this is not necessarily dangerous as it will soon disappear when the sun is warm.

The temperature at the middle of the bed, with the thermometer bulb just off the ground and facing the sun may range from 70 to 90 in the day time, with a morning temperature down to 40 to 50. Should it run down to very nearly the frost line it would to no harm to most plants. Neither will it do harm should it run up to 100 to 110 for a short time, after the plants have made the third leaf; provided the bed is not dry and the sun is hot. Such heat from below would destroy the plants. Both of these extremes are on the danger line and should be avoided. To hold an even heat, it is necessary to ventilate some even in cold winter weather. Draw sash down a little from the top but allow no cold draft to come in at the bottom side. As the season advances and the air gets warm tilt the sash and allow a free circulation. In regulating temperature one must not be entirely dependent on the thermometer, but must be able to tell what is needed by simply raising a sash and putting a hand under the glass. In cold bright weather it is often necessary to change the ventilation a little from three to six times during the day. That is, from 9 a. m. to 3 p. m. it is necessary to look over the beds about once every hour during the first few weeks of plant growth.

Water may be given whenever plants need it. In cold weather it can be given only in the brightest part of day, by removing one sash at a time and then quickly water the space with a fine sprinkler. Water should be at about 100 degrees.

Damping off occurs when beds are too warm or closely covered, never in a cool light bed.

Lose no opportunity to give plants sunlight. On stormy days or after a heavy snow it may be noon before covers can be gotten off, but it is very important that they be taken off every day, if possible. Covers should be put on about the time frost forms on the under side of the glass, which indicates the fact that the beds are cooling. This we want to prevent to carry over the cold nights. Beds handled in this way will go safely over 40 degrees below zero nights.

The cultivation of hot-beds can be openly done in winter only on very warm days and consists in weeding and stirring the soil between the rows.

Should frost enter your beds on some cold night, keep the bed very close for several hours until temperature rises and plants show whether they are alive or dead. Some of the more hardy plants will recover without serious injury if only the leaves are frozen. Tomato, pepper, and very small cabbage and cauliflower will probably be destroyed.

The time required to grow fine large plants for field setting varies from one to three months according to the variety. Common vegetable plants require about four to six weeks.

For successful hot-bed work an ample supply of water is an absolute necessity.

Time will not permit the mention of the various kinds of plants and the treatment each requires, or many other important points, but from what has been said it is clear that eternal vigilance must be exercised in scientific hot-bed work.

DISCUSSION.

Mr. Periam: How many sash do you have?

Mr. Smith: Oh, I guess about two hundred, or a little more. I do not know exactly.

Mr. M. B. Sperback: I would like to ask the gentleman to what depth he puts in his manure in starting his hot beds later in the season, or do you vary it?

Mr. Smith: Yes, we vary it. If you put a 16-inch bed of manure in the bottom the first of April, you will probably destroy all your plants. I am speaking of the winter growth, to carry through the coldest winter weather.

Mr. Sperback: What depth would you use at starting your beds the first of April?

Mr. Smith: Oh, about ten inches. That depends a little on the season; if it is pretty backward, pretty cold, I might possibly put in 12.

Mr. Sperback: What time do you water your plants?

Mr. Smith: Any time they ask for it and the weather will permit.

Mr. Sperback—What time of day, or does it make a difference?

Mr. Smith: Well, we have never discovered any; we usually do it in the winter time during the bright part of the day.

Mr. Sperback: I understand you use water that has been warmed somewhat?

Mr. Smith: About 100 degrees.

Mr. Sperback: Some claim that it is as well to take water right from the well.

Mr. Smith: Well, you go out and lie down on the ice and drink out of the hole that you chop in the ice, and it will rather make a cold streak run down the front of your vest, you would rather have it a little warmer. It will not kill the plants, but I am speaking of proper and scientific work. If you continue drinking ice water in the middle of winter and eat cold meals, you will probably have stomach trouble, and I think the plants would too.

The President: The temperature you would have would be about 100 degrees?

Mr. Smith: Yes, in the winter time.

Mr. Utter: Don't you vary the temperature according to the beds? If the water is the same temperature as the beds later in the season, the temperature would not be as much, you would use colder water.

Mr. Smith: In the spring when the weather gets mild, we take water from the city water mains, which runs 50 to 55, perhaps 60, it varies a little perhaps in the spring when the plants are larger, more hardy, they begin to harden a little, but if you put that water at that temperature on a bed of tender plants in mid-winter, you will kill them, or, while it may not kill them, it is not the proper thing to do, any more than it is to take a baby and put it into a cold bath. As the nurse said, it does not need a thermometer, if the water is too cold he turns blue, if it is too hot, he turns red. The plants will turn blue if your water is too cold.

USE AND ABUSE OF FLOWER GARDENS.

Edwin B. Skewes.

For purposes of this discussion, the term flower garden shall be defined as "any space on private or public grounds used for the growing of flowers except the flower areas of the professional florist where flowers are grown for seed or sale."

The greater part of our flowers are of course grown on herbaceous plants, but no fast line can be drawn limiting us to this kind of plant; vines, shrubs and even trees must sometimes be included in the garden.

There are two distinct ends sought in growing flowers. One is to give touches of bright color to the nature-pictures that we endeavor to work out on our lawns and public grounds. Thus used flowers may be said to be enjoyed at long range. The other end sought is the possession of flowers—that we may have them to admire as we watch them grow and blossom and pick for house and individual use—in short that we may enjoy them at close range. It is very evident that when flowers are grown for this second reason, that it, for the sake of the flowers themselves, the determining factors in the choice of varieties will be the likes and dislikes of the grower, or perhaps his curiosity to see a particular kind grow and bloom. But when flowers are grown to form a part of a nature picture, their adaptability to decorative uses and their fitness for the particular spot must be first considered in the choice of varieties. In the one case individual preference may run riot. In the other it is largely eliminated and the grower is bound by rules of landscape art.

FLOWER GROWING FOR LANDSCAPE EFFECT.

When growing flowers for landscape effect, the same rules will apply whether the plan of our nature picture be more or less pretentious. A full discussion of this phase of flower growing belongs to the domain of landscape art. Only a few hints and admonitions can be given in this paper, and those because they relate to the abuse of the flower garden.

To make a flower garden on a lawn or in a park and plant therein our favorite flowers, and even to make the garden a thing of beauty in itself but without regard to the landscape requirements of the place, would be a gross abuse of the flower garden. And it scarcely needs to be said that very many of the gardens seen on lawns and in our parks are entirely out of place, and not a few of them are unfit for any landscape use whatever.

It is an abuse of a flower garden to attempt to make it serve both landscape and cut-flower use. A properly planted landscape garden can furnish but relatively few cut flowers either in quantity or variety, and flowers desired for cutting are not always suitable on the lawn. Therefore flowers for cutting should be grown elsewhere than on the lawn.

Pattern-beds are almost always out of place in landscape use, and other formal beds and gay specimen plants must be used *with caution.* They are too stiff and too conspicuous by sharp contrast to be readily harmonized with surroundings.

Flower endgings along walks, shrubby and herbaceous borders on the side and back boundaries and as screens to shut off undesirable views, vine draperies over porches and to accentuate projecting angles of the house, and flower banks on the terrace are usually appropriate elements of the lawn landscape. To develop these elements safely, however, will require a good degree of skill and taste in landscape art, for sky-line and contour, lights and shadows, harmony of colors, succession of bloom and many other things should be considered. *Such flower areas must not be treated as independent gardens* as is so often done.

FLOWER GROWING FOR THE FLOWERS' SAKE.

When growing flowers for the flowers' sake we need not be particular about the place for our garden. We can take what space we can get and plant accordingly. The lawn garden will to some extent satisfy our needs in this direction. A corner or row in the vegetable garden is a good place for many varieties, and flowers cut from there will be just as beautiful as though plucked on the lawn. Perhaps a part of the back yard can be spared for flowers. It may be only the corner by the cellarway or simply a box hung outside the window. A little experience will determine what varieties will flourish in our garden, and wise planning can make even a small area furnish a profusion of bloom throughout the season. Many people thoughtlessly assume that a place filled with beautiful flowers will therefore be a beautiful place. But in planting the humblest garden there should be exercised thought and taste in selecting and locating varieties. A concrete example will illustrate and enforce this point. The two gables of an L-shaped house faced south and west respectively, and each face had a large landscape window in the first story and a somewhat smaller window above. In the angle of the L was a square perch serving as front entrance to the house. A wing with ridge running east and west was joined to the house on the east side and a veranda ran the full length of the wing on its south side. Both gable ends looked bare and bleak and the bareness and bleakness were intensified by a rather high brick foundation wall with a cellar window in each face. The south face was treated in this way: A crimson rambler rose was planted on either side of the window. A convex bed was then made 14 feet long (the width of the house end) and about 3 feet wide at its central part. About 20 inches of each end was sown to white phlox Drummondi. Close in front of the roses and extending from one clump of phlox to the other was sown a row with salpiglossis half its length in the center, and at the ends pink phlox. In front of that row, another was sown with starred-and-fringed flox in the center and pink verbenas at the ends. Then an outside row, curved the shape of the bed and from one clump of white phlox to the other, was sown with portulacca in the center and white sweet alyssum at the ends When the flowers came into bloom the effect was very pleasing—a bank of green and bloom nearly half the heighth of the downstairs windows sloping gradually to the grass, its colors bright and harmonious, attracting and delighting the beholder whether seen from near or far. And its beauty lasted for many weeks, for the flowers used are what may be called all-season bloomers.

The west end was treated in this way: A small shrub was planted at either corner. About 18 inches from the wall was planted a row of tall nasturtiums supported by 36-inch chicken fencing inclined toward the house. The tall nasturtiums were flanked and faced by a dark flowered variety of dwarf nasturtiums and this row was faced between the shrubs with curled parsley. The effect of this arrangement was not as brilliant as that at the south end but was very satisfactory. These were not exceptional cases. Similar care will produce equally satisfactory results in almost any situation. In no garden need the eye be offended by the intermingling of inharmonious colors or by rude contrasts of form and foliage as is so often done. Fancy one of the above described beds planted with dahlias, zinnias, marigolds and poppies! "A word to the wise is sufficient."

While flowers can be used extensively in landscape art and a flower garden be made a most beautiful place, perhaps the largest and best use that can be made of the home garden is the growing of flowers for cutting. The refining, inspiring influence of the companionship of flowers can not be overestimated. A dainty rose with a simple, bright bouquet of flowers robs the sick room of much of its dreariness. A few well selected flowers on the dining table makes the food more appetizing and the companionships of the hour more enjoyable. A flower given to a departing guest makes friendship sweeter and the heart more loyal. And when it is possible to take or send flowers to unfortunate ones in hospital or tenement they carry with them a ministry of love and cheer that may lead to the healing of the body or the redemption of a life. We need not neglect the making of our gardens beautiful, but plant them so that we can gather rich harvests of cut flowers.

Not all flowers lend themselves equally well to cut flower uses. But almost any flower of clear color, good form and sufficient lasting quality may be used if we exercise a little ingenuity and adapt the conditions of its use to its character. For instance, hollyhock flowers have too short stems to be readily handled in bouquets but they may be arranged in a shallow dish their short stems resting on the bottom and the flowers supporting one another in an erect position. And thus prepared they make a very satisfactory centerpiece for o not too crowded table.

In selecting varieties to plant, however, we may as well select those best suited to cut flower uses and an abundance of a few well chosen varieties will be better than a few of each of a large number of varieties.

In making bouquets avoid making them too compact. Do not make them with a face and a back for they may get turned about accidentally, and a bouquet with its face to the wall is a pitiable object. Do not use too many kinds of flowers in the same bouquet. One kind is usually better than more; but if more be used, be sure that they harmonize in form and style as well as in color. If in doubt as to the harmony of your colors, either in planting or in arranging cut flowers, introduce whites. White is the peacemaker among colors. Be careful to use a vase suited to your flowers—for example, a heavy brownish opaque one for gaillardius and a clear glass one for nasturtiums. In ordering flower seeds do not order mixed packets. Choose your colors and know the reasons for your choice. You will thus cultivate taste as well as flowers.

The following books are recommended to those who wish to gain a better insight into the naturalistic type of gardening art:

"Art Out of Doors" by Mrs. Schuyler Van Rensselaer. Published by Charles Scribner's Sons.

"The Beautiful Flower Garden" by F. Schuyler Mathews. Published by W. Atlee Burpee.

Any of Prof. L. H. Bailey's books that deal with the beauty side of planting.

DISCUSSION.

The President: Mr. Skewes, you are a greenhouse man, are you not, is that your business?

Mr. Skewes: I am a farmer, raising hogs and corn.

A Lady: If your house had faced the north instead of the south, what would you have planted in the front gable?

Mr. Skewes: That is a pretty hard question to answer off-hand. I could not have used those combinations in there—could not have used that south combination on the west.

Mr. Menn: Would you plant a front gable, as a rule?

Mr. Skewes: No, sir. The point I wished to make in that illustration was, that the architectural features of the house called for something to cover those bare ends. It might be proper to say, Mr. President, that there is a great deal of difference in the different faces of the house. The east face is the best, by all odds, south next, and the west the least advantageous of the three, and worse than that perhaps is a little angle facing the south and thus getting all the hot noon-day sun.

Mr. Houseman: What kind of flowers would you plant on the south side of the house?

Mr. Skewes: You can plant anything you wish.

Mr. Edwards: How would the paniculata clematis do for a house fronting north? And then you might use the ferns. Of course you want to take off some of that bare look, and many are using with nice effect the ferns as a border, and the paniculata clematis will do excellent work on the north side of buildings, also the engelmanni and the Boston ivy, if not too far north.

The President: How far north for the Boston ivy?

Mr. Edwards: Well, it fails more or less in this latitude. In Detroit you will find it in large quantities, especially on the north side of buildings. In some places the Boston ivy fails. Up here seed flowers in the shade are not a genuine success. I heartily endorse Mr. Skewes' idea that one very nice place to raise our flowers is in the garden; we certainly want to preserve our frontage and lawn in a large proportion. You cannot get the best success without you have a liberal supply of sun. ,

Mr. Toole: We are glad to have the north side of the house, because it is such a fitting place to have our native ferns and wild native plants. It does not seem to be just the place for climbers, we have these native climbers on the west side, but we could use most of our native climbers on the north side if we needed them there, so that if any one has a north exposure, anything to hide, or decorate, or anything to change the outline, if we had nothing but our wild plants growing, we may feel wealthy in our resources,

HOME GROUNDS.

Delbert Utter.

When we have in mind an ideal home, it is not a city flat or even a city house, may the architecture be ever so elaborate and the furnishings extremely luxurious.

The model home must be located where there are ample grounds surrounding the house, how ample depends on the size of buildings and the ability of owner to lay out and care for in a proper manner. When we speak of home grounds we do not mean the front yard but the back yard as well, the barn yard, the garden, the adjoining fields and the road side. The front yard and lawn should receive our best attention but the back yard should be kept clean, the barn yard should be kept from view, hidden by buildings, hedges or shrubbery. The adjoining fields should be free from weeds and some crop grown that will cover the ground during winter, not only for a better appearance but also to prevent dust from being blown into the house and also to save injury to shrubbery and hedges. Evergreens in particular are damaged by wind storms where there is bare ground in adjoining fields.

The roadside should be kept free from rubbish, stones and weeds and in front of the lawn should be cut with a lawn mower. The arrangement of buildings has much to do with the appearance of a place. The out-buildings should be in the back ground, making the house the center and most prominent part. We speak of this, and I think it is right, as we would of a picture we wished to frame using trees and shrubbery for the frame and also fences if you wish, making the frame to correspond with the buildings. If the house is of stone or one of those low rambling kind, let the grounds follow nature's lines, the drives and paths being wider and more irregular in their curves, while if the house is of a stiff modern type, then let the lines be more formal, the hedges, drives and fences being kept nearer along regular lines but always keeping as close to nature as possible. Neatness and harmony has more to do toward making a home beautiful both inside and out, than any expensive artificial embellishment that a full purse may supply.

In speaking of harmony, while it may not come within the province of this paper, I do wish to say a word about the painting of farm buildings. In traveling about the state we see too many buildings painted either in a gloomy or gaudy color. Now why not use a color that will blend with nature's colors, choosing white and the neutral tints of gray, green and brown, blending colors that will be restful and cheerful to the sight. It will then follow out the thought that we are making a picture and one in which all the colors harmonize. In framing our picture we wish to make the better parts most prominent and cover and hide the ugly parts with vines and shrubbery.

The lawn should be given the best of attention. If we are making a new lawn, the first work is to grade properly; it should slope away from the house in all directions, making drives from road-way to barn and house. The drive to the barn should be direct while the one to the house should diverge in easy and natural curves, never losing sight of the thought that we are striving first for utility and secondly for beauty. The driveway should be excavated to the depth of from six to twelve inches according to soil conditions, filling first with coarse gravel or cinders, then finishing the last three inches with screened gravel or crushed stone. Nothing adds more to the appearance of a lawn than a well made and well kept drive. The edges should always be kept straight and graded so that water will run off readily.

The preparation for the lawn should be as thorough as for a garden crop, if soil is not of the best, good soil should be drawn onto it, then leveled and firmed so that it will settle evenly; this should be as thorough if sodded as if seeded. Whether we sod or seed depends largely on the size of the lawn and nature of the soil. If the soil is naturally mellow and rich, a good sod can be established by seeding liberally with blue grass and white clover. This may be sown in early spring or in September. If sodding is preferred cut sod from good blue grass pasture, cutting about two inches deep and rolling pieces of such width and size as may be most convenient to handle. Sod should be laid carefully and rolled or firmed evenly, using water if possible as soon as placed. How much shrubbery and how many trees we should plant depends so much on natural surroundings that much must be left to individual taste and conditions.

For myself with a bleak exposure and a south front, I set a

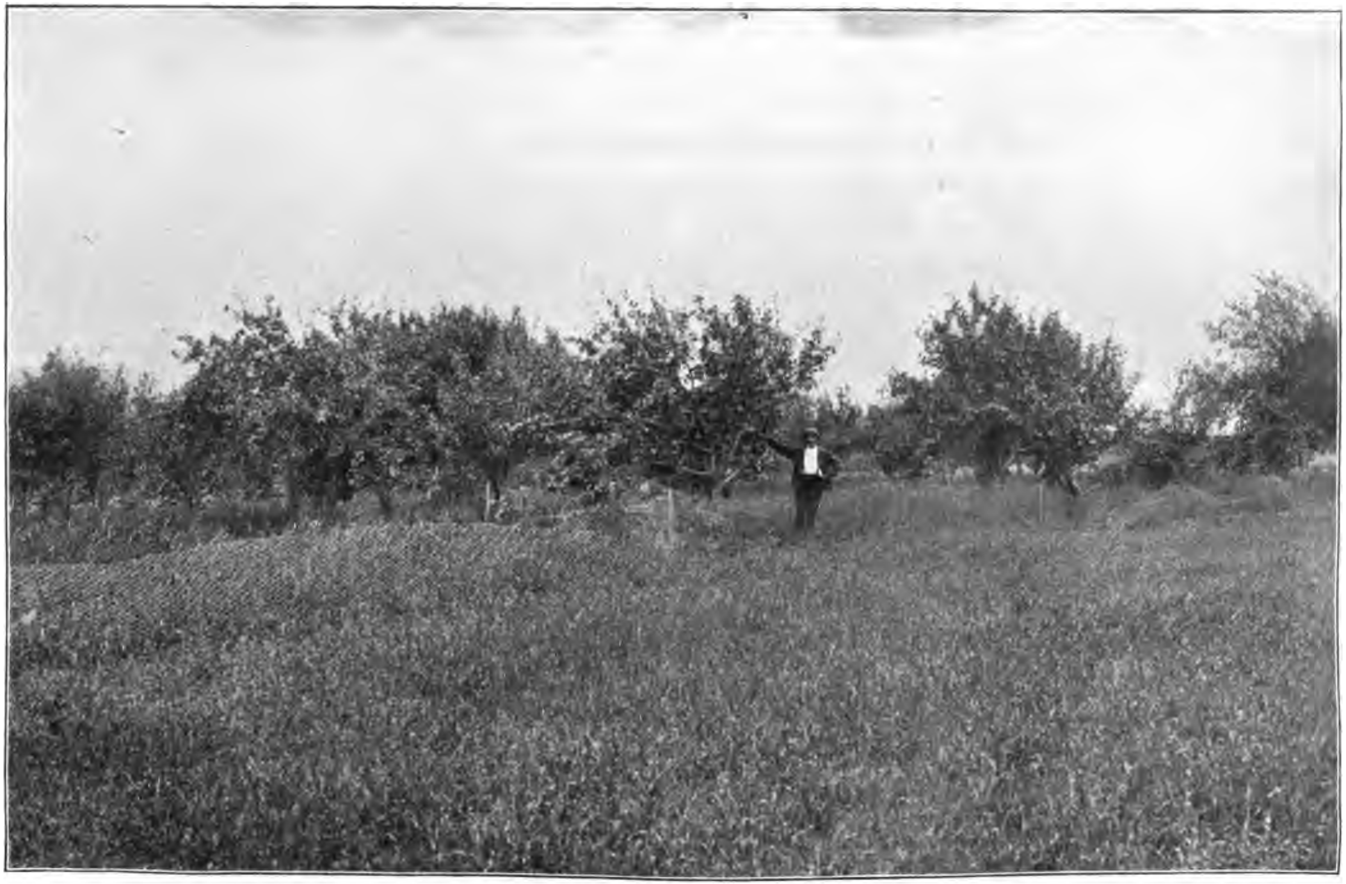

FIG. 1.—A Marathon County Orchard.

row of hard maples along the roadside, a row of Norway spruce on west and north sides for wind break, and have grown a hedge of white cedar on east and part of north side. Specimen trees were planted on west and north sides; some of them were fruit trees, a mistake being made in planting too thickly and nature and necessity has brought about a thinning process. As to small shrubbery I would advise rather too little than too much. As I have before said much can be done to cover or hide sheds, walls, fences and other objectionable places with vines, shrubs and trees, the varieties depending upon location, exposure, etc.

As to flower beds, don't put them in the front yard. Place them at the side or better yet in the back yard. A large bed of tropical plants in the back yard but located so that they can be seen from the street, has a very fine effect. Such a bed with a row of caladiums around the outside, then one or two rows of cannas with castor oil beans in center, makes a very imposing and pleasant sight. Such a bed lasts from midsummer to the frost period. The thing to avoid in planting beds is short season plants, that is those that die down early and leave a bare bed for the balance of the season.

I have taken up this subject in a homely way, from a farmer's point of view, hoping to encourage others in the improvement of their home surroundings. There is no class that have as permanent homes as the farmer and no other class that has the opportunity to make as beautiful homes.

Too much care and work has in many cases prevented that attention to the home grounds that is necessary for the best results. The lack of appreciation of the beauties of nature by many is traced to the same cause. Again the early settlers in a wooded country look at the trees and forests as their enemies and it has been the battle of their life to cut down and destroy them. We see this to the extent that today in the northern counties there are many places where you cannot see a tree within several rods of the farm buildings and the country looks more barren than in many sections that was formerly a prairie.

We see many who instead of beautifying their farm home, moving to the village and town. At the same time the city man is moving to the country to get more room and they appreciate that a real home must be surrounded with grounds enough to give them a chance to live nearer to nature. Travelers say that the greatest defect in European civilization is the lack of real farm homes. Farmers live in villages and have all the evils of both rural and urban life. It has been said by one of the best writers on agricultural subjects that the great strength of this republic lies in its farm homes. The influence of city life is demoralizing and unmakes the natural man. That is why every effort should be made to put a happy and contented farmer on every available farm.

Wisconsin is noted for its beautiful homes; nature has provided all the natural adjuncts; the climate and soil are favorable to the growth of the best grasses and all hardy trees and shrubbery both deciduous and evergreen. Except at rare intervals there is enough soil moisture for perfect growth. We have all the varieties of surface conditions from plane to mountain with rock formations and plant and tree growth that go to make as fine natural scenery as is to be found anywhere.

DISCUSSION.

Mr. Edwards: Mr. Utter, I wish to ask you if you would advocate everybody following your plan. Now, you have a beautiful Norway spruce wind-break, I judge eight or ten rods west of your building; now if you were to start again, would you do likewise, as a west frontage, or west side ground?

Mr. Utter: I would in the oblique exposure, but where you have natural conditions that give the surroundings less than that exposure, it would be unnecessary, and I think it would be out of place if the surroundings were wooded, because it would look too formidable. If the conditions outside were naturally with considerable tree growth, I would not grow a separate hedge for a wind break, I would want a bunch of trees, or grove of trees, rather, for a wind-brake. Make it in accordance with the surroundings.

Mr. Edwards: In regard to country homes, I think there is nobody in the Northwest that has got the natural advantages to make a beautiful home, just as Mr. Utter said, as the farmer, and just as quick as we get more electric lines, you will see more, I think, of these people that live in towns, moving out into the country, so that they can have a chance to make a nice home. They do not have it in town, they do not have the room.

Mr. Utter: We see that perhaps more in our country, where city people are coming into the country and building summer homes, first, they have begun by building homes for a few months in the summer, now they are building themselves homes and occupying them in many cases the season through, and they see the advantages of country life, and with better facilities by trolley lines that will be continued. And the influence of the city life on the farmer is for the best, I think they take more pains with their surroundings, and in each neighborhood, when people once start in to buy a lawn mower, each farmer will begin to better his surroundings until it seems like a disease that is infectious, and the whole community are taking better care of their grounds. I think that is so probably further inland, as it is here. I think you have a beautiful town, if we could see it when it does not rain; I think from what I have heard and see in the hall that you all think much of your home surroundings, which I think adds a great deal to your home life and family life and will make us more contented.

Mr. Menn: Mr. Utter, in your travels throughout the state, through the country and even the city, do you not find often that too many shade trees, or even ornamental trees, are planted in the front yard and thoroughly hiding the residence from the road so you can hardly see the house? Don't you think that is too often the case, that too many trees are planted in that way? I think we should guard against that.

Mr. Utter: I do. I made that mistake myself, I planted some trees in front of the house. While I do not really like too bare a front, I like a nice clean free lawn kept in nice shape, and too much care cannot be taken in keeping stock off. The stock of many farmers gets into the front yard sometimes in the early spring, and they do damage that cannot be overcome for the whole season.

Mr. Edwards: Can you give us an idea as to where you would plant your shade trees?

Mr. Utter: I would plant them in the corners, the back corners and at the sides. I would fill the corners full, and the highest trees at the back, and then lower shrubs in front. While I am not familiar with the varieties of low shrubbery, they are beautiful and they make fine effects in the corners, and I notice now in the large yards in the city and in the parks and in the cemeteries they are growing shrubbery of low habits with different colored foliage, not blossom, but foliage and they have very fine effects, growing the lowest growing shrubbery in the foreground and then towards the back the higher growing, the different colors blending.

Mr. Edwards: In short, you would plant so as to keep open your most pleasant views?

Mr. Utter: Yes, I would make those pleasant parts the most prominent, and those that are most objectionable I would cover.

The President: I think we have had some very fine papers and we will get some good from them, more in reading than we get here, when we can study them.

There is one thing in which I wish to digress somewhat from the program. We have some 20 minutes left anyway, and we have also Prof. Cranefield of the University Experiment grounds here, and he has a large display of plums and can tell us all about plums.

PLUMS.

Prof. Cranefield: I know but little of fruit; I hope to know more in time. We receive very many inquiries at the Experiment Station which we are glad to have and to answer either in person or by letter as far as possible. Probably from June to November we receive more inquiries in regard to native plums than on any other subject; whether it is due to the fact that we have been interested in plums for several years past, whether we have been trying to push the native plum or not, I cannot say, but it is a fact that the people of Wisconsin are intensely interested in native plums.

Now, as I say, I plead ignorance of the subject in a general way; we do perhaps know something about the different varieties of the native plums; I would be glad to answer so far as lies within my knowledge any question in regard to varieties, that is about all I can say. I do not propose to make any discussion on the culture of the native plums or anything of that sort, but this morning I did put down two or three brief lists of plums which seem to me answer in a general way a majority of the inquiries that have come to us.

The questions are generally like this: What varieties of plums would you recommend for culture in Wisconsin? We answer first by saying, we recommend the native plums, we do not recommend the Japan plums, we do not recommend the domestic or European plums for culture, we recommend for the fruit grower the native plums.

Now, that is a wide field. We have on the Experiment Station grounds 324 new varieties of native plums which we are testing, and we have nearly 6,000 seedlings that we have grown, of our own, from those native plums, but, of course, out of that 324 varieties there are comparatively few that are worthy of cultivation. That has been a large part of our work, to cut down, weed out and throw away the worthless ones and hold to the good ones. Another part of our work has been the improvement of native plums. While those we show here are very few —in the rush of work I requested the foreman to pick two crates of plums to be brought down here; I do not wish you to understand that I wish to slight the Omro show, but this is intended, as I understood it, primarily as a flower show, very little fruit, and a large exhibition of the fruit will be at the Milwaukee fair; I hope you will all go there and see our native plums; we hope to have 500 plates of plums at the Milwaukee fair, we are aiming at that now. The best of the natives are not shown here, the best of our seedlings certainly are not here. Mr. Marshall knows more about plums than I do, and his selection does not agree with mine. I would suggest as ten plums for the market: Surprise, Wyant, Quaker, Hammer, Ocheeda, Brittlewood, New Ulm, Hawkeye, North Star, Forest Garden. I wish I could make that nine and cut out the Hawkeye.

Of five varieties for the market I would limit them to Surprise, Wyant, Quaker, Hammer, Forest Garden.

Of the newer varieties, some of them are ten years old, but they are not yet on the market, it is difficult to give descriptions of some of these varieties, in fact, all of them. I would name as excellent plums, some of them better than any of those named in the first list: Etta, Nellie Blanche, Diana, Beatty, Keith, Wood, and the best of these is the Beatty, highest in quality.

There are several things we have learned by growing plums from seed. There are certain ones of the old varieties that are excellent breeders; we can plant any of those varieties and be pretty sure of getting good varieties. Out of perhaps 150 Quaker seedlings that have fruited for two or more years there is not a dozen poor ones amongst them, there is not half a dozen that you would call poor plums. We perhaps set our standard a little bit higher than the average plum grower, we must, if we send out seedling plums, they must be better than any named variety. This is true of the Quaker and Wyant, and I think I may say of the Rollingstone, although we place it down as a poor quality, still it has given excellent seedlings. It is not to be inferred from that that there are no others that will give good seedlings, because some of our best seedlings have come from comparatively unknown varieties.

Of course the subject of native plums is, or at least appears to us a very wide one. We might talk quite a time and yet leave untouched many points in regard to growing native plums, but I have opened the subject, and some of us perhaps may be able to answer the questions that are asked.

Mr. Toole: Mr. Cranefield, have you received any encouragement in any direction from your experience in spraying plums?

Mr. Cranefield: Yes, the greatest encouragement. Last year, owing to a number of things, we were unable to spray plums. I would like to go one step farther back than that to this point, and say that if there is any one who expects to go into the business of growing native plums, they should make up their minds at the start that they will require just as much care as any other orchard fruit. It is a mistaken notion that the native plum will flourish of itself; they all require as much care in spraying and culture as the apple or the pear. The native plum has just as many, if not more, diseases and insect pests that it has to contend with, as the apple. I speak from watching native plums for ten years. You have got to fight for your fruit every step of the game, and I doubt if the codling moth is as destructive as the curculio; I know the apple scab is not nearly as destructive as the plum rot. Our work in spraying this year has been very satisfactory, we have had most excellent results in spraying. We sprayed four times with Bordeaux mixture and twice with arsenite; I mean, two of the sprayings with arsenite were mixed with the Bordeaux, and we have probably saved our entire plum crop by doing it. Last year we lost nearly the whole crop from plum rot, as it was nearly impossible to spray.

The President: Mr. Cranefield, across the lake Mr. Marshall has no plums, but he sprays as much as you, how do you account for it?

Mr. Cranefield: Mr. Marshall accounts for that from the fact that his plum blossoms were frosted this year; I think his diagnosis is correct.

Mr. Marshall: That is correct, I would like to back up Mr. Cranefield. I sprayed twice and I only have a few plums. Across the lake they have as clean plums as I ever saw, and mine are dropping rapidly with the rot.

The President: Can you account for the difference between that four miles; it is not over four miles from Mr. Marshall's to your place?

Mr. Cranefield: The only basis on which I can account for it is that we had a little breeze across the lake, across Fourth lake, in the direction of our orchard during those cold nights. It struck Mr. Marshall first from the north side, and passing across the open water, it was warmed sufficiently to protect our plum orchards. I am quite certain that no one in the state of Wisconsin has sprayed more thoroughly than Mr. Marshall, and more intelligently, and if spraying would have saved his crop it would have been saved. On the other hand, in our orchard in Madison we left checked trees that were not sprayed early in the spring and I think all fruit rotted, sand cherries that were not sprayed blighted. Understand me, the loss last year was not with the ripening fruit, it was in the blossoms. Do not get the idea that you can put off spraying plums until the fruit ripens, the greatest danger lies at the blossom period; you must spray your trees before the buds come out, before the leaves appear, that is when the greatest harm is done. Our trees are sprayed twice in the dormant state and twice in the full leaf, and we have not one-tenth of one per cent. rot in the orchard. The most rot we have is on the domestic and Japan plums.

The President: One more thought. I have set out Surprise, Quaker and Wyant together, that is, in the same plat. Now, when I get those plum pits and plant, I am not obliged to buy plum trees of anybody?

Mr. Cranefield: Well, if you have anything like the success we have had. I base those statements on our experience that we have there, and we have grown, I do not know whether it is five or six thousand seedlings.

Mr. Marshall: I do not agree with Mr. Cranefield. I think that if I took the Hawkeye, which he would throw out of the market, with your seedlings, I could get ten cents more a basket for them, nine out of ten baskets, that he would bring from those seedlings.

Mr. Cranefield: From the Hawkeye seedlings?

Mr. Marshall: No, from your Quaker. I would take the poorest plum, that he says is the poorest of his list, and I think they would bring more money than nine out of ten seedlings that you get.

Mr. Toole: Is the Hawkeye the Ben Davis of our plums?

Mr. Cranefield: Well, it is a little worse than the Ben Davis among the apples. A splendid looking plum, and I find it sells very readily.

Adjourned until 1:30 P. M.

AFTERNOON SESSION.

ROSES.

Mrs. Treleven.

Mr. President, Ladies and Gentlemen:

At the first glance this subject seemed quite easy to take up, but on more thorough investigation and thought find that even roses is a broad subject. The gentlest minstrels of all ages and nation have sung the sweetest melodies of the roses. Legends and traditions of flowers are as old as literature, but all is not legend. Some roses have a history and bear in their names remembrance of the gay, the valiant, the beloved, and admired.

The antiquity of the rose is so great, that all trace of its origin has been lost. In biblical writings it is mentioned prior to the reign of Solomon the Wise, and its essence was in high favor in Jerusalem and Judea during the sway of the luxurious king. On good authority it is stated that every country in the world, with the single exception of Australia, produces wild roses. Travelers through Greenland, Kamschatka, and northern Siberia, have found roses in their season. Whaling vessels have brought specimens of the native Spitzbergen rose, and it is claimed that more than one thousand species are known to botanists. It can readily be seen that Nature, the Master Gardener, gave us many varieties to begin with, and this has been realized by man, and the work has been done systematically, and it seems that the heart's desire has been fully realized in the many beautiful varieties, that vie with each other in beauty and hardiness which has been the result of experimental work.

June is rightly claimed as the month of roses, and the rose is conceded by nearly every one that loves flowers to be the queen of flowers, and of course every lover of plants that has a garden wants a collection of roses. Although if June is the month of roses you will see the bushes continue to exhibit their beauty and bloom (if well cared for) in the month of July just as beautiful as in June, and it is not uncommon for a healthy and well cared for bush to manifest its gratitude by sending out a beautiful flower or cluster of flowers when you supposed its blooming days were done. In choosing a location for the rose bed, select one fully exposed to a free circulation of air and not very shady; roses luxuriate in a rich, deep soil, and remember they do not like too moist a soil. If the location is a wet one it must be well drained, a rather heavy soil with some clay will suit the wants of the rose better than light, open soil. The early part of May is the best time to plant the rose; dormant plants are better than those that have been grown indoors during the winter; many dealers graft their roses, but quite frequently these grafts die off and shoots sent up from the roots on which the grafts were placed fail to bloom; but with roses on their own roots nothing of this kind will take place, for shoots that are sent up will be like the original. Strong plants on their own roots that have been grown a season are best for beginners. I feel sometimes that plants we buy are weak from a too high state of culture which they have been subjected to for the sake of getting a large number of plants in the shortest possible time. As to varieties they are many. The hybrid perpetuals give good satisfaction; they are not all perpetual bloomers, but many of them if rightly managed give a good amount of bloom. Give clean culture and when they bloom the flowers should be cut off before they begin to fade. The moss roses require the same kind of treatment. It is said that a well grown moss rose is considered one of the finest horticultural productions of the world. Then there are the climbers, though not so fragrant—yet are unsurpassed in beauty. Take for instance the Crimson Rambler, one of the most wonderful of climbers with its beautiful crimson clusters. The Baltimore Belle, Prairie Queen and Clothilde Soupert; these will give the best of satisfaction if well cared for, and what is more artistic than to see some of these climbers embowering our verandas, balconies and doorways, or even on a trellis or post (where it would not have so much tendency to mildew), or even festooned along a driveway, how picturesque. The roses of southern California were an amount of pleasure to me right in winter, to go out on the veranda and gather a bouquet of fragrant roses would give any lover of flowers a desire to live in that land of sunshine and bloom.

Some of the best hardy varieties are Provence, or Maiden's Blush, the Hundred Leaved, the Persian Yellow, American Beauty and General Washington. Of the hardy hybrid perpetuals some of the most beautiful are General Jacqueminot, Mrs. John Laing, La France, Madam Plantier, and Ball of Snow and many others. We must bear in mind that experienced gardners will accomplish with roses what the amateur cannot. I am a great lover of the Tea roses and have been quite successful with some varieties such as the Clothilde Soupert, Hermosa, Queen Scarlet, the Bride and the Bridesmaid. I have mentioned enough for quite a collection for new beginners. The hardy June roses do not require very much covering in winter if they are bent down and covered with a few inches of leaves or litter and lay some boards or boughs to hold them down, or I have been very successful with a slight covering of dirt. One of the principal reasons of failure with roses is uncovering too early in the spring; it is not the hard freezing but the freezing and thawing which is killing for them; after the covering is taken off before growth begins they should be well pruned; we do not cut back enough; we are too much afraid that we will cut off some. We must have new wood if we would have flowers; rich soil and pruning stimulates the production of new branches. Roses have enemies, and we have to fight them or they will be master. The slugs will generally give way to a good sprinkling of strong soap suds with a little tobacco water in it just after sundown, for then they are on the upper sides of the leaves feeding; some prefer the kerosene emulsion. The rose bug or rose chafer is one of the worst insects to contend with, but it is claimed that the kerosene emulsion will subdue it by persistent use. The rose louse can also be controlled by spraying with a solution of whale oil or strong soap suds and tobacco water. White hellebore and also Paris green is good in fighting the insects that prey on the rose. It is best not to spray in wet or cloudy weather for the insects commit their depredations in hot, dry weather. In starting roses from cuttings unless one has a little practice it is best for amateurs to procure their plants from some of the rose growers that understand the business, than to bother with the few one would need in a season.

Roses are not all grown for pleasure; in some countres they furnish bread-winning employment to many people, mostly women and girls. Demand begets an industry. The Parisian belles, the ladies of London, the daughters of our Greater New York, all contribute and help to make the demand for the essence or attar of roses which is such a delightful perfume having no idea of the work that is necessary to produce it. As a commercial product the rose is cultivated in many different parts of the world. Attar of roses forms one of the most expensive substances in the world. An ounce of pure attar is worth one hundred to one hundred and fifty dollars. The red rose is said to be the one principally used for this oil. In some of the foreign countries the rose trees are grown for wind-breaks, and a protection against snow-drifts, grown as hedges. These hedges are grown about six feet high, and in summer they are gayly green bearing fragrant roses while in winter they withstand the sweeping snow storms.

Not long ago I was particularly interested in reading an article about the world's greatest rose-garden that has been planted in the city of Knowledge. This vast garden is said to contain 50,000 trees of the hardy and semi-hardy varieties. Four acres of roses, what a beautiful picture! Each collection separate and distinct in itself, yet forms a great and artistic whole, and it is expected that the spring of 1904 will witness the awakening of the greatest and most artistic exhibit of choice roses ever collected. This garden is situated on a high elevation and will be a beautiful picture for St. Louis visitors.

DISCUSSION.

A Member: I would like to inquire how she prevents the hopper from destroying the rose leaves?

The President: That is, the white fly?

The Member: They are the regular hopper, that jump and fly.

Mrs. Trelevan: I find by spraying for other insects, that is about all you can do, at least that is all I have been able to do; I keep the plants sprayed for other insects, and I do not know but that would subdue them as much as anything.

Mr. Edwards: Did you mention, Mrs. Trelevan, what you use for spraying, what preparation?

Mrs. Trelevan: I use soap-suds a great deal in the spring, and I have used hellebore, and I have also used Paris green, but you have to be careful in using Paris green. The kerosene emulsion I know has been recommended, but I never used it. I like tobacco water, mixed with soap suds.

Mr. Edwards: Nicotine is very poisonous. Do you use tobacco water ordinarily with soap suds?

Mrs. Trelevan: I think it is better with the soap suds, yes.

Mr. Edwards: I have used kerosene emulsion with very nice results, if I do not get it too strong, about 1–12.

Mrs. Trelevan: Yes, I know that is the nature. I had a plant once that I had tried several things on and I could not get the little black louse off from it, it seemed they were determined to stay there, and I fixed up what I thought was a kerosene emulsion and I fixed the plant, too, so I made up my mind that any one has got to be very careful, it has got to be well mixed, and I think any one has got to thoroughly understand it to have good results with kerosene emulsion.

Mr. Menn: How do you get rid of the red spider?

Mrs. Trelevan: Cold water will subdue that. You take and spray them, keep your plants wet just occasionally with water, and that will subdue those little red spiders. Take the little tea rose that we have in the house, if you do not keep them sprayed they will be covered with them. But it is the same as with the fuchsias, those little spiders will trouble fuchsias, but if you keep the foliage wet, that will keep them down.

Mr. Toole: In my experience I have a great liking for a preparation on the market called nicoticide. It is a liquid preparation and very convenient to use, whether for the purpose mentioned, or for the snowball, or the scale on your vine. I have never known it to injure anything. About a teaspoonful of this preparation to two quarts of water. Reference was made to roses on their own roots. I heartily favor that.

GLADIOLUS.

W. J. Moyle.

The gladiolus or sword-lilly is one, if not the most, beautiful summer flowering bulbs we have. My reasons for this claim are summed up as follows: Remarkable adaptability to varied conditions, great beauty, a variety of bloom suitable for all occasions, very easy to cultivate and has very few enemies to prey upon it, the only insect pest that has been noticed by me being the blister beetle; this fellow will sometimes drop down on your flowers when they are in bloom and damage them considerable by eating off the petals. The plants are sometimes affected by rust in a very wet season but not very serious.

The gladiolus family is a very large one, indeed, as at present we have over 90 species. Yet few of the flowers bloom for us as they grew when first discovered. For as soon as the scientific botanist found out that the different varieties hybridized very readily and the creations for this hybridizing were in many instances improvements on the parent plants, they were not slow to take the matter up and soon most exquisite forms and colors were presented for our consideration.

The Cape of Good Hope, South Africa, presents us with the greatest number of native species. These were largely used in hybridizing with the European varieties in producing new colors and forms in the flower. The French were the first to take up the matter of producing new varieties. Lemoin no doubt has done more than any other person to bring this noble flower before the public by presenting us with such varieties as Marie Lemoine and others of a similar form and marking.

At the present time, however, this flower is given more attention in America and more rapid strides have been made in its improvement than anywhere else in the world, as today we cannot speak of the gladiolus without mentioning such men as Hallock, Van Fleet and Groff, all Americans who have given us some beautiful specimens.

The gladiolus Childsii which is of German origin I consider as yet the most beautiful on account of the size of the flower, length of spike and robust habit. All of the Lemoin hybrids are very beautifully marked but the plant is often a slender, crooked grower which makes against it as a cut flower. I have found that to have it bloom to perfection the flower spikes should be cut and allowed to open gradually in a cool room away from direct sunlight.

The proper place to grow the gladiolus is in the kitchen garden. Here you can go and cut them by the armful and decorate your house and table.

To keep them from falling over prior to or at blooming time it has been my custom to plant the bulbs in trenches about five or six inches deep and as the flower spikes grow upward gradually draw the earth towards them. This will greatly assist in keeping them from falling over. It has been my practice to make several plantings at different times, thus prolonging the blooming season.

The Groffs hybrids which are so popular at present should be in every one's collection on account of the new colors that we get in this mixture. They have been quite expensive but are now within the reach of all.

DISCUSSION.

Mr. Morris: What do you set in the ground to prevent their falling over?

Mr. Moyle: That is a question. I tell you, I found several remedies for that, one was to plant my gladiolus in a trench about six inches down, and leave the trench open until they got a good start, then gradually fill up, and that will to a certain extent hold up your plant. My plants are not staked at all. But my men went in early in the season and put this soil in too early, and the result was, some of the bulbs rotted and stems rotted. You have got to look out for that; do not plant them too deep to start with, but when they have made a good start, then heap in the soil, that will prevent them from falling over. That has been my experience.

Mr. Reek: In what kind of soil do you succeed the best?

Mr. Moyle: Well, sir, I take any good old soil that comes along. My soil is a black prairie soil, clay sub-soil. I manure it well and with well-rotted manure, plant them in my nursery rows with other flowers.

Mr. Reek: Is there any danger of getting it too rich?

Mr. Moyle: Well, I do not know, it might be so, I think, although there was a grower there, Mr. Baxter, who manures heavily, plants his bulbs in this heavily manured soil, and I never saw such a show of flowers as that man had. Yet it is possible if you put on manure that is not well rotted, it may rot your bulbs.

Mr. Reek: How would it do, for holding up your stalk, instead of filling in this soil in the trench, to put in some of this fine pulverized manure, how would that do for top dressing?

Mr. Moyle: That would be good, that would be first rate. I think you have got a very easy task before you. I know of no flower that will grow better and be more satisfactory than this flower.

Mr. Toole: Mr. Arthur Cowee, of Berlin, New York, has recognized our Society to the extent of offering a special premium for this Society, so that I think we ought to think well of him on that account, but I think well of them for I sent for 100 of Groff's hybrids, and out of that 100 I have such beauties that I would like to increase them. I have been satisfied in the past with the increase I got by simply planting, and the bulb will give me two, and sometimes three, occasionally four good large blooming bulbs for the next year. In addition I have a whole lot of little bulblets; I think that the Marie LeMoyne will give you more than any other kind you will find, but I came across one patch of gladiolus where I was told that if you increase from these bulblets, with a little care you get far better bulbs for use than the others. Certainly you get more increase. I would like to ask what we would best do in the way of increase, whether to use the vast amount of these bulblets?

Mr. Moyle: That is a problem I have had to contend with. You know some varieties increase very rapidly. If you dig up the Marie Lemoine in the fall you have 25 bulblets at the bottom. Take some of the Childs, they increase very slowly, they will probably just divide and have no bulblets at all. Quite frequently some of these I cannot state how it will be, but most all Lemoine flowers increase very rapidly. My method is to mark my plants in the row, if they are mixed, those that I want to save, then carefully dig them and save all these little bulblets, then nurse them. There is another matter and that is in regard to how these bulbs are grown from seed. It takes three years, probably, for a plant to grow large from seed, so you see it takes quite a while.

The President: Mr. Moyle has pointed out the LeMoyne and another beautiful one and another of the Childsii, and Shakespeare, a beautiful white, and then he has held up this Groff seedling, that insignificant thing and told us to buy that, and the bulbs cost from $5 to $18 a hundred.

Mr. Moyle: I tell you, Mr. President, that is only one, that is the poorest one I could get. The reason I emphasized that Groff's hybrid is this,—you have there a contrast of colors that are not found in the other varieties. These are more solid colors. Marie Lemoine has quite a contrast, and all the Lemoine seedlings have beautiful contrasts. That is one of the peculiarities of Groff's hybrids, there are so many of them of peculiar color, blue and pink, with variations, very beautiful, and some of Groff's are rank growers, big, stiff stalks, and that is the reason I advocated growing them. I did not do it because I had an axe to grind, but because I want you to have the best plant you can get.

Mr. Edwards: Have you any white?

Mr. Moyle: It is a slow propagater.

Mr. Lewis: Did you ever try to cut the bulbs before you planted them?

Mr. Moyle: Well, yes, that is the method, they claim if you cut them, in time they will spread out, make more bulblets, that is what they say, but very often if you do that, it is the ruination of your bulb.

Mr. Lewis: You ruin your bulbs, but you get a number of bulblets.

Mr. Moyle: That is one the Doctor brought here (indicating) that is a very peculiar color, you see, that is one of Lemoine hybrids, you can tell that peculiar shape of the flower, they have that peculiar orchid shape that is characteristic of

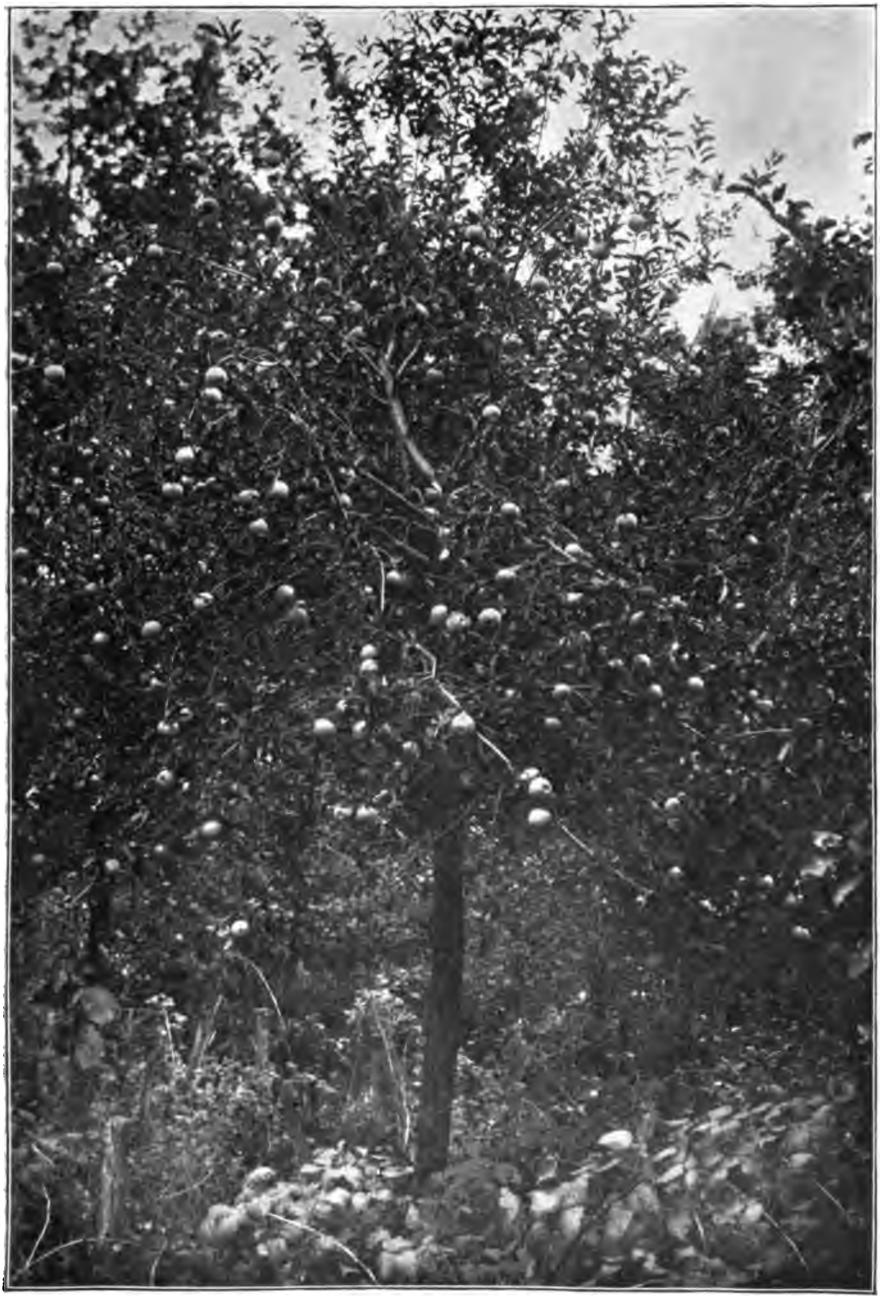

FIG. 8.—The Cairns Seedlings, Ellsworth, Price Co., Wis.

Lemoine hybrids, and they grow crooked, too; then that peculiar stem, they do not grow right up straight. That is a very fine flower, a beautiful thing.

Mr. Smith: How long does it take these bulblets to get to blooming size?

Mr. Moyle: That depends on the care you give them. If you plant them in the spring in good soil, give them good care all summer, they will be good-sized, they will bloom next season, but ordinarily it takes two seasons. Some bulbs will grow so that they will bloom next season. I have seen Marie Lemoine grow on the bottom of the bulb that bloomed the very next summer, they grow so large.

GROWING DAHLIAS.

B. M. Vaughn.

Few flowers give more satisfactory results as a back-ground, hedgerow or low screen, than the dahlia. And indeed few are more beautiful in clumps on the lawn border. They are easy of culture, of vigorous growth and the better varieties are very free-flowering.

Dahlia-culture is quite simple and inexpensive. Once stocked with the toes one need not buy a new stock each year, as is necessary with so many other annual flowers.

Any fairly good, well drained soil will grow dahlias; but for best results the soil should be moderately rich in nitrogen and phosphoric acid and rather more than moderately supplied with potash.

A location should, if possible, be chosen when the winds have not too strong a sweep, as heavy winds are likely to break the stalk from the root. They like a cool rather than a warm location.

Obtain from your nurseryman, seedman or neighbor such varieties and colors as you desire. That must be left to individual taste. We have found that, among our customers, Clifford W. Brouton seems the choice among yellows, Black Prince takes well among the dark colored varieties, Variabilis, Beauty-inconstant, American-flag and Fern-leaved-beauty take well among the variable, striped and variegated ones. One that we have, the name of which we do not know, but the color of which is light lavender, sells better than any other variety in our list, for cut flowers.

We give the above list at random. There are probably a hundred other named sorts that are nearly as good. Possibly some are better.

Having your stock, if still in clumps as dug from the ground, divide, before planting, by cutting through the crown connection, so that not more than three healthy strong toes are left together.

If you want extra early flowers, start your plants in boxes of moist warm earth, preferably mostly sand, in the house, greenhouse or hot-bed, four weeks before danger of frost is past. Keep the soil moist but not wet and plant out seven or eight inches deep as soon as danger of frost is past.

If you seek late flowers, plant your dahlia toes (not more than three together if strong) in the place where they are to grow.

If your dahlias grow very rankly they may require to be staked, or strung to wires to prevent the wind breaking them down.

When your plants are eight inches high nip out about three inches of the end of each stalk, to keep the plants stocky and increase the flowering tips. Nip again when about eighteen inches high.

Keep the old flowers cut off, as "the less seed the more flowers."

When frost kills the tops of your dahlias, and before the ground freezes at all, dig up your clumps, rattle off all loose soil, keep them a short time where the air is dry, to dry the remaining soil and evaporate any excess of moisture on the toes, and, when in good condition, store in a moderately cool and dry cellar. Dahlias will usually keep where potatoes will, but will not stand quite as low a temperature in storage. You will never be sorry that you planted liberally of dahlias. They cut well. They look well on the plant and, for the most part, they are free bloomers.

DISCUSSION.

Mr. Lewis: I would like to say that I always found I got the best plants and the best results by placing the whole roots in the soil in boxes, or hot beds, barely covering the surface over, just leaving them a little of the soil, and when they sprout and grow to be about three or four inches long, take the shoots off and put in sand, and if kept moist it will root in a very short time, and that I find makes the best plants.

Mr. Reek: I would like to enquire about the methods of keeping those roots and determining about the eyes, so as to get them sprouted nicely next spring. You say, put the whole root in boxes?

Mr. Lewis: Put the whole root in boxes, in soil, put the whole root in the ground and cover it just over the surface. The object of that is to get a short, stocky growth, get something firm at the bottom. You know if you take a geranium cutting, after this wet weather the majority of them will rot off, but if it is dry weather, the root becomes firm and that cutting would not rot off. You get a solid, harder root and hardier shoot.

Mr. Reek: Before setting out in the yard, do you separate these roots, the numerous tubers?

Mr. Lewis: A cutting rooted in the way I have just mentioned will be far ahead of any old root that you can put out. When I was a young man in the florist business, I used to take off all the cuttings that we wanted, after that we would throw the old roots on the rubbish pile, did not think them worth saving. The young plant is more vigorous, flowers earlier and gives better results.

Mr. Periam: In relation to planting tubers for blooming, I have had the best success in taking the cuttings later and getting the bloom just at the last end of the season, get smaller tubers. In answer to the question as to where they sprout, they never sprout from the tuber, the eyes are not on the tuber, but just on the stock, near where the tuber enters the stock, but the late cuttings produce the best plants for winter use.

The President: How do you determine whether you are going to get an eye or not before it is sprouted.

Mr. Periam: You cannot tell, and for that reason we always leave about that much of the stalk of the dahlia on until we plant them in the spring, and then we determine, or the adept can tell pretty closely where the buds are coming out, by always leaving a piece of the stalk with the tuber in cutting.

Mr. Lewis: I would like to say that a dahlia never produces a shoot from the tuber, it produces its shoots all around the crown, you never get an eye from the tuber.

HERBACEOUS PERENNIALS.

F. C. Edwards.

When I approach this subject I do so with some trepidation, as I am a student and observer as well as a grower.

The people are becoming much interested in plants of a more permanent character. The foliage of herbaceous perennials dies and is removed after it has done its season's work. The root system goes to sleep evry fall the same as shrubs and deciduous trees. Nature gave us a large class of these plants counting the product of all countries, which have been brought together, and by seedlings and cross fertilization a list can now be procured to satisfy the most fastidious.

Our country does need dissemination and knowledge on Herbaceous Perennials and planting of same to get best results. And our Horticultural Society ought to lead in bringing this matter before the people, and the press is very willing to place good material before its readers.

I sincerely hope our Experiment Station at Madison will take up the matter of planting out in an experimental way a full line of hardy perennials reporting to the state the results obtained.

Nothing appeals more strongly to the managers of *parks, summer-home resorts* and the tasty *city* and *country home* than shrubs and hardy perennials properly arranged with proper soil and care given. As stated in my paper given at Madison at the summer meeting two years since: We take for granted a person must have a lawn and not live from six to ten feet from the sidewalk. We deplore very much that the home builders of the past did not build forty to one hundred feet from the sidewalk or street with side grounds to correspond. We will first mention in the line of perennials *Paeonies* which are planted with good effect on borders of drives and walks, and in some locations massed with satisfactory results. I presume there are five hundred sorts, but this list ought to be reduced by choice to twenty-five and this to six to twelve sorts for the ordinary planter. I might mention the *Paeony Officinalis Rubra,* early, double, crimson, large size, fragrant. The old-fashioned Red Paeony; the Lamartine, bright red; the *Festiva Alba,* pure white, with a few marks of carmine in the center; *Festiva Maxima,* the most beautiful of all the white paeonies. The flowers are of extra large size, in clusters, and petals as fine as silk. Color pure white with a crimson drop in the center; *Whitleyi Plena,* light blush white, cream centers; *Gradiofora Carnea Plena,* outside petals delicate pink, center yellowish white; *Reine des Fleurs,* light pink, large center, tinged salmon; *Umbellata Odorata,* rose, fragrant; *Luc Barbier,* deep purple, one of the very best dark paeonies. Paeonies give us an endless variety of color and form of flower, and one of the best for massing. Foliage dies last of July or first part of August, and something must be in the beds to take its place at this time. Phloz is very good for this purpose. Paeonies ought to be divided every five or six years and a liberal supply of manure mixed with the soil. The Cut-leaf Paeony flowers much earlier and foliage gives nice effect, but it is rather difficult to propagate.

Phlox Paniculata is one of the best and most satisfactory hardy perennials we grow, its season of flower being three to four months. A very large number of beautiful varieties are grown, thirty to fifty named sorts with colors clear and strong, flowers large and satisfactory in every particular. There are the tall growing, medium and low growing sorts. The first two mentioned and the Moss Pink are a great source of pleasure and satisfaction, but plant the lower growing sorts in front of the taller varieties. I find many do not distinguish between *Phlox Paniculata* and *Drummondi*—the former a hardy perennial, the latter an annual seed plant. Never use the purple or lavender phlox with the other colors as they produce a discordant effect, but by themselves, in a clump, or with white all are lovely. We can well say in colors there are crimson, carmine, scarlet, pink, purple, violet, mauve, magenta and pure white, besides others with stripes of contrasting colors. The same as Paeonies I would mention some names and brief descriptions: *Croesus,* fiery carmine, crimson eye; *Zouave,* largest, purplish crimson, red eye; *Etna,* scarlet, dark crimson eye; *Pantheon,* fine, deep salmon, rose; *Jules Finger,* tender rose, with deep rose eye; *Queen,* pure white; *Alceste,* bright pink, deep red center; *Mme. P. Langier,* bright red, vermillion center; *Richard Wallace,* white, violet center; *Hector,* pink; *Jules Jouey,* lilac rose, white center; *Ampena,* bright pink; *Boule de Feu,* bright scarlet, overlaid salmon; *Lilliput,* bright magenta, crimson eye; *Coquelicot,* red; *Montegnard,* very dark red. In mentioning the above I do not say there are not other good sorts, but the above are giving great pleasure to the planter.

German Iris has a better foliage than Japanese and the flowers possess many shades of the yellow and orange in addition to the Japanese, hence very desirable, and grows on higher lands than can the Japanese variety.

Japanese Iris is one of the great flowers of Japan and ranks next to the Chrysanthemum for those people. The very large flowers it has often measured six inches across, and the markings in color are very pronounced, ranging from pure white and shades of rose, dark red, purple to almost black, with many mixtures of all the above colors. Plant near water courses or lakes. The blossom season of the Japanese Iris is about thirty days later than the German, which enhances their value.

Hollyhocks. Some of the most beautiful results can be obtained by grouping in suitable backgrounds the double and new sorts of Hollyhocks. The better new sorts do not grow as tall as the old sorts. Plant them on slopes in front of Evergreens, shrubs or trees of a dark foliage. They are a biennial old time flower and want to be put in new soil every two years or they are apt to rust and not only destroy themselves but the remainder of the flower garden. A proper use of Bordeaux mixture will do away with this disease. Seed sown in May will bloom the following season, and one year plants planted in the spring will produce fine flowers the same year. People still cling to many of the old-time flowers when improved.

Lily of the Valley, a small flowering plant and much sought for grows best in shady places, needs occasional thinning and fertilization to get best results.

Dicentra or *Bleeding Heart,* a very graceful plant and fine fern growing foliage, long arching stems and beautiful pink and white bloom.

Rudbeckia or (Golden Glow) is one of the most meritorious plants introduced—absolutely hardy—and grows in any soil, and blooms in great profusion in August and September, but must be planted in the background and other perennials in the frontage, as it attains the height of six to seven feet and stools rapidly.

Native Asters are very beautiful for lawn borders and shady places. *Cordifolius* and *Undulatus* sorts grow best in our northern states.

Hardy Carnations in assortment we are growing with good success and the bloom rivals the green house work in some locations.

Digitalis or *Fox Glove,* a stately plant producing racemes of flowers two feet in length, thimble shaped and spotted.

Perennial Larkspur, one of our best border plants, grows several feet high and its place is in the back row of the border. Formosum is a brilliant blue sort and very effective. Pinks are handsome and there are scarlets and whites.

Hardy Sunflower (Helianthus Multiflorus) is very striking in appearance, golden yellow. Dwarf sorts attain three to four feet. Sometimes protection, given by coarse manure, is needed.

Platicodium Grandiflora, a very constant bloomer of purple bell shaped flowers, which gives excellent results and commences to bloom in July, continuing till frost.

Yucca Filamentosa, very nice to plant on border of drives and gives green foliage all winter and a spike of bell shaped white flowers in July.

Columbine Acquilegia, very beautiful in form and habit and same in color of flowers and blossoms very early. It is both single and double and color ranges from scarlet to white.

Yellow Day Lily, a fine hard plant, flowers large and in clusters, very fragrant.

Tiger Lily are perfectly hardy and contribute much to beautifying, if placed among other tall growing perennials.

Coreopsis lanceolata, a low growing plant with bright yellow flowers. Very hardy and all the season bloomer, excellent for the front row in border.

Variegated Grasses are fine in some locations. Occasional clumps contribute much to large places. Eulalia grasses of which four sorts are especially fine, besides smaller growing sorts for border work.

A *perennial garden* can be so arranged in beds and walks as to be a great source of comfort. In regard to care of this class of plants compost manure should be given to beds as covering for winter to be spaded in the next spring. Thorough tillage is essential. The word perennial cuts all formality out of planting perennials as their name means simply doing away with set lines.

The parks and summer homes for a few years at least will plant shrubs and perennials in combination beds. I do not say this will or will not always prevail, but heavy planting in the next few years will be done along this line as borders of shrub clusters.

Preserve a good portion of the frontage of your home to lawn and good shade and ornamental trees. Take off the bare look on corners, points and angles with perennial and shrub combinations. The city and the country homes ought to plant their perennials largely on the side and backgrounds or else in garden. I hope not in straight lines but varying in width to suit the surroundings. On the background some massing can be done on the bare places with good effect. Plant perennials with higher growing sorts in the background and shorter growing sorts in the frontage, but keep an eye all the time on the sorts that will give you a constant bloom as much as possible. Hardy perennials should do their part in making the bare places bloom profusely and make life several degrees hoppier.

DISCUSSION.

Mr. Lewis: I would like to ask the gentleman if you have proved *coreopsis lanceolata* to be perfectly hardy, to be what I should call a hardy plant?

Mr. Edwards: Well, we have but recently gone into some of these perennials; it went through last winter.

Mr. Cranefield: It is not hardy at Madison.

Mr. Lewis: It is not considered a hardy plant. It is a little misleading to call it a hardy perennial. I would like to ask also what percentage of the hollyhocks is likely to bloom when the seed is sown in May?

Mr. Edwards: It will bloom the next year.

Mr. Lewis: I will tell you my experience. If you sow hollyhocks in the fall of the year, now for instance, that you will have just as fine bloom next summer, and in a great deal less time.

Mr. Edwards: I have seen them bloom very nicely, with the plants planted in the spring of the same year.

Mr. Lewis: We at one time grew from 10,000 to 15,000 hollyhocks every year. We had them in green-houses, sowed them early in the spring, and they had fine flowers that year, but unless you get them in the early port of the season, you cannot insure the flowers, but if you sow fhe seed in August, or early part of September, with a suitable soil and climate, they will all flower next summer.

The President: The question is for me on a sandy soil, can I grow hollyhocks and have them live over winter any time?

Mr. Lewis: I think the sandy soil is to be preferred to a heavier soil, I think you have a little advantage there. But at the same time, the hollyhocks are not very hardy, and there is an uncertainty about their living even under the best of care. In some places down east, for instance, they have given up growing hollyhocks almost altogether, until within the last year or two, with using Bordeaux mixture, they are beginning to plant them again.

Mr. Edwards: You will notice, I state, these perennials to be covered with best fertilizer every year as a protection. I think that is a safe way. In regard to the hollyhocks, they are a biennial plant; I suppose they do not bloom much finally.

The President: They won't live for me, that is the trouble.

Mr. Edwards: You are dating back four years ago, when we all lost them.

The President: I have planted them several times and I have never had a hollyhock.

Mr. Lewis: They are all right in a very rich soil.

Mr. Moyle: This gentleman spoke of phlox. He says phlox is one of the hardiest flowers and one of the most beautiful, yet I find a great deal of trouble in carrying them over. Are we to understand that we are to plant them out and take no care, or do we understand that they have got to be petted and cared for; how is that?

Mr. Edwards: I said plainly, but I might repeat it, that these perennials ought to be covered with a mulch of manure for the winter. That is a safe way. Of course we all know that that hard winter we lost our perennials, we lost our phlox, a large class of perennials went that winter, we had to plant them out again, but the phlox stays over with us very nicely, carries through the winter.

Mr. Toole: This thought comes to our minds always when we look for our most hardy perennials, that though we have something now that we can plant out like shrubbery, take the same plant and have it for a number of years, in the end there are almost none that you can depend on in that way. While they are all hardy, that is, most of them are hardy, many of them are classed as hardy, but they really are not. Many of our perennials, like the hollyhock, we must treat as biennial, and all of them, practically, if you do not divide them up, you will find after a while, even with your iris, the fleur de lis, if you do not divide them up, you will lose them eventually, and the phlox, if you do not divide it every two or three years, you will lose that. As to the *coreopsis lanceolata*, it is hard to treat as a biennial, some will live and some will not.

Mr. Moyle: The gentleman speaks of one thing there in regard to the covering of these plants; now there is something that I want to emphasize a little bit for the benefit of everybody here; probably it is not necessary, but I found it in my own experience. He said to cover these plants with a compost of manure, he did not say what kind of compost, but a compost of manure. The idea of that is this, that this manure will decay and nourish the plants and the plants will do better in the spring. Now, be very careful in that regard, I have practiced to this to my sorrow repeatedly. For some time past I have never used any compost at all for my plants, because the compost in the spring of the year, if we get beyond freezing weather, and if we come to take off this compost, at spots it will be frozen off, and when we leave it we find this compost has decayed and gone down among the plants and frozen and rotted, this manure has affected the plants. So now, in my own practice, I always use something of a coarser material, hay, or straw, or something of that kind, and before placing that on, I place brush over my plants, because they must have a little space, or they will rot.

Mr. Edwards: You misunderstood me, I said this was to be spaded in early in the spring, the compost manure. Now of course that changes a great deal. I agree with Brother Moyle heartily on the phlox; there are some that are hardier than others, but with protection last winter it carried through and gave fine flowers. Some winters we will lose some of it if we do not give it some sort of protection, but just those two things paeonies and phlox, are two wonderful plants, they are doing us grand service in this country and will continue to do so.

Mr. Skewes: I want to ask Mr. Edwards if I can carry a plant safely through the winter if that plant to me is not a hardy plant, and if another plant what he perhaps considers more hardy and finds that is a plant that he cannot carry through the winter successfully if that plant to him is not a tender plant? I think we are too apt to overlook the fact that plants need attention as much as children, and no two plants of flowers can be treated exactly alike in the same garden, the gardener must go among the plants, study them individually, as the stockman does his stock and as the mother does her children, then we can almost know what the nursery-men call hardy plants, but unless we do that we shall fail.

Mr. Reek: I would like to ask a question. Is not the delicate period the time between the winter and the spring? My experience is this, that we have not much trouble in the winter, things have come out all right early in the spring, but carrying them from a dormant state to the period when they make natural growth, with me has been the most difficult, and one that has cost me more than all others. I have had plants that come out fine very early when I uncovered them, and I am at a loss to understand as to carrying them through this delicate period.

Mr. Toole: I think Mr. Moyle has given us a general rule, the whole trouble is in the long dampness that sometimes follows the thaw shortly after, and with this protection of soil, rubbish or brush in pansies I always recommend by all means have a little brush, also a very light cover of leaves. Another thing, see to it that in your garden there are no places where water will gather and settle and ice form.

Mr. Lewis: I would like to say about this covering, which has excited considerable discussion. I think it is a mistaken notion among a great many that they cannot cover with anything except manure. Now, manure is all right and feeds the plant as long as it is growing, but when the root is in a dormant state, it cannot take up food, it lies too heavily on the plants and through the dampness of that manure the air cannot circulate and it rots and kills a great many plants.

In regard to coreopsis lanceolata, I think it is far better for those who are using it to sow the seed early in the spring, you will get better results, you will get stronger, healthier, more robust plants, more flowers, and not fuss with them over the winter. My experience with these hardy biennials is that if they are sown late, the first of August or the latter part of July, they winter much better than if set early in the spring, that is, hollyhocks, Canterbury bells and coreopsis, sow them in the latter part of July; you can winter them very much better.

Mr. Periam: There is a very important point in this question of mulching whether plants will be hardy through the winter or not. A great mistake made by even some critical cultivators is that they cover too early in autumn and leave the mulch on too late in the spring. Now, the frost does not kill the plant, it is the thawing out that kills.

Mr. Reek: Mr. Edwards, in regard to paeonies, is there such a variety as the rose scented paeony?

Mr. Edwards: There is a variety that is called that. I do not know as I can tell whether there is a botanical name affixed to that.

Mr. Moyle: That is the L. L. Ellis, it is a beautiful, sweet-scented paeony.

Mr. Reek: What will you take for one?

Mr. Moyle: I do not like to say before the public.

Mr. Edwards: That is a local name, rose scented paeony.

Mr. Moyle: Yes, I have bought lots of them, but I do not like the smell.

ORNAMENTAL CLIMBERS.

William Toole.

Our subject is so comprehensive—embracing many varieties of plants, of various styles of beauty and degrees of usefulness—it is difficult to decide how best to classify them, so I will say let's ramble over the topic, like a native grape vine over an elm or a burr oak, hoping freedom of style may lend attractiveness to the result.

Nearly all climbers are rampant growers, consequently hearty feeders, and should not lack nourishment if best results are desired. For their varied beauty of flowers or foliage we may desire to grow many kinds. Then we must carefully arrange that some be not over grown with others. Bitter-sweet will hold its own with the luxuriant Virginia creeper, but our native clematis if not assisted, will be lost in the combination.

Maurandia Lophospermum and Minneapolis vine make a happy combination, but Morning Glories do not show up well in mixture with other climbers, except the Scarlet Runner perhaps. Some vines like the Morning Glory and Cypress vine are so decidedly stringlike in habit of growth, they are easily overgrown by more branching species of climbers. All vines should be furnished with something to climb up at the beginning of growth, otherwise their progress is very much retarded and through neglect of this care we may lose a good part of the season's possible growth, and even if this were not so, great injury results from trying to untangle a mass of growth which should have been previously supported.

Of varieties we will first consider our American Ivy-Ampelopsis-Quinquefolia or Virginia Creeper, the most useful climber we have, whether to drape the porch or veranda, clothe the trunk of dead or living tree with verdure, furnish shade for the hammock or rustic arbor, or cover brick walls when bare space seems to need it. This vine is worthy of a paper by itself, and I hope Professor Cranefield may sometime choose to write it up. For climbing on brick or stone, some people imagine that our American species of Ampelopsis is not suitable—that it will not hold and that we must substitute for it Ampelopsis Veitchi or Japanese Ivy for this purpose, but this so-called Boston Ivy is not hardy for us here in Wisconsin, and our American species is suitable if the right varieties are chosen.

Through influence of environment in growing for a long time where there are only trees and shrubs to climb on, some of our native ivy has nearly lost its tendency to attach itself to smooth hard surfaces, but at Devils Lake we find it clinging in sheets of green to the perpendicular face of quartzite cliffs, and on the South Hall of the Wisconsin University may be seen a grand example of the beauty of Ampelopsis Quinquefolia when covering a brick wall.

While the Japanese ivy kills back every winter it seems to be hardiest near the ground and a lower growth of it might be trained under our own ivy, making a pleasing contrast which would be to the advantage of our native species. Celastrus scandeus or Climbing Bitter-Sweet is another native worthy of a foremost place among porch or arbor vines. Its growth is slow at first but when once established at the corner of a veranda its sturdy growth and abundance of bright green foliage through the summer with quantities of scarlet fruit through fall and winter, all commend it to general favor.

Our native Honeysuckle Lonicera Flava is with its glorious foliage and red berries an attractive vine, and will afford a considerable amount of shade if given room and timely support. In its native habitat we often find it surmounting some straight stemmed shrub, and spreading out with a drooping top suggesting great possibilities, for variety in the growth of many of our climbers including especially Bitter-Sweet and some of the roses. This lonicera is subject to attacks of slugs and aphis, but we seem to be in the spraying business to stay, so while the pump is in hand we can easily attend to these.

Don't omit the scarlet Trumpet Honeysuckle Lonicera Sempervirens. It fits well in or at the house corners and is worthy of a special place somewhere. It is easily grown and reasonably hardy, but Professor Cranefield has a Siberian variety at the Experiment Station, which he says will stand even one of Tuttle's test winters.

Among half hardy climbers the Trumpet Flower Tecoma Radicans and the American Wistaria W Frutescens are worthy of special care, especially the former of which we notice some fine specimens in bloom in Baraboo gardens this summer.

As these vines bear seed with us, it seems as if the plant breeders might develop more hardy varieties than we have now.

Our native Clematis C Virginiana should be in every collection attractive as it is for its luxuriance of white flowers and later its feathery masses of seeds which are as showy as the flowers. While it is a hearty grower it must not be overshadowed with masses of foliage which it cannot surmount. This should be grown with the foreign species C Paniculata which is a later bloomer and still more showy in flower. The two together give a long succession of bloom. The yellow flowered Clematis C Graveolens is very hardy and a luxuriant grower, covered in the fall with billows of feathery akenes. It is not so well known as it should be.

Our native showy Clematic C Verticillati or Atragene is a better grower under cultivation than is generally supposed. In the grounds of Judge Kelsey of Baraboo it reaches a height of more than twenty feet and in spring is covered with large showy purple flowers. The different showy clematis of the Jackmanni type are so beautiful and well known they need no praise here but they are so subject to blight that those who plant them risk disappointment.

Climbing Roses all should have and if space about the house has been taken up with other things, make a trellis for them elsewhere.

Queen of the Prairies, Crimson Rambler and the single Michigan rose we know we can take care of, and there are others said to be just as hardy, but we have not proved them. Wouldn't it be fine for the flower lovers of Wisconsin if our Experiment Station would test the hardy and half-hardy roses, and show us just what can be done with them. We all love roses, and how many dollars annually might be saved to home makers, if we knew just what we might safely plant. Or would it be better for our State Horticultural Society to establish an ornamental trial station? Second only to the Ampelopsis for a shading vine is our native grape and if one with staminate blossoms is chosen, their delightful fragrance in June makes us for a time at least think that it is best of all. And in our collection we must not omit the beautiful Moonseed vine—Menispermum Canadense—with its large, glossy, dark-green leaves. Give it a pole to climb, or the corner post of the veranda and then admire its beauty. On one house in Baraboo it twines around the water spout. It is trimmed nearly to the ground each spring and each year it seems if possible more beautiful than ever.

Thus far first thought has been given to natives, not because they are natives, but because they are more useful and beautiful as vines, than any exotics. To fully realize their best possibilities we must have natural effects. What is more beautiful than a tree trunk covered with Ampelopsis or trees draped with our native grape, and we love to see in some wayside thicket Green Briar or Smilax Hispida and the wild Yam-Dioscorea Villosa. I have never grown these two but have seedlings of the Smilax and shall try them.

Some day I hope the Madison people will have bordering some one of their beautiful drives, a collection of our native climbers grown to imitate nature's way. I'll go to see it then. Our boys tell of a drive near Madison where the owner had not disturbed the wildness of the roadside border, but had cared for and helped its growth. They were charmed with the beautiful contrast of foliage of grape and wild ivy, mixed with hazel and sumach. But not all of our useful climbers have woody stems or perennial roots. Many are annuals, or by annual planting, are treated as such. First among these should be placed the Cobaea Scandeus. If started early it is a rapid grower, always using more space than is allotted to it. Its large purple flowers are unique and it is rarely troubled with insects. In the fall it remains green after frosts have cut down most of other vines. The Ipomeas include a wide range of species. All are beautiful and easily grown. We have a Moonflower mixed in with Cobaea and Clematis and the large white flowers are a pleasing sight evening and morning. One plant from the florist each spring is enough, but it may be started early from seed and there is enough beauty in the foliage to pay for its care. With this for variety may be added several other perennial rooted Ipomeas, like Ipomea Pandurata and I-Mexicana, but none of them will stand the winter.

We sometimes grow the Morning Glory and like the old fashioned kind for its freedom of blooming and the Japanese for luxuriant growth and large beautiful flowers. The two should be grown together as the old fashioned kind comes into flower first and the Japanese keeps up the abundance of bloom later in the season. Mix in just a few of the ivy leaved Ipomea Quamoclit, Their bright scarlet blossoms add to the beauty of the rest, The Minneapolis Vine-Pilogyne Suavis makes a beautiful sheet of verdure in a surprisingly short space of time and forms a beautiful combination with Mauradnia, both white and purple, and the more showy Lophospumum. The last two with Thumbergia should be started early from seed but the Minneapolis vine I have increased only from cuttings. These with the so-called parlor ivy are all suitable for vases, window boxes, and indoor decoration to which may be added the Tropaeolums.

Madeira vine is beautiful and easily grown but should cover a window or trellis by itself as it does not seem to harmonize in mixture with other vines. Another native vine, Adlumia Cirrhosa or Mountain Fringe, a biennial, is very pretty but is often troubled with red spider. Even the weedy looking wild cucumber is a thing of beauty in the wild border but always seems out of place among the cultivated plants.

A number of other things might be mentioned among ornamental climbers and more might be said about care of them, but it was not intended to write a book on the subject, so we will close by saying that the Apios Tuberosa is delightfully fragrant and well worthy of cultivation, but is not like the Wistaria as stated by some dealers.

DISCUSSION.

The President: I want to ask Mr. Toole if he has got Crimson Rambler grown for four years, and of any size?

Mr. Toole: I will say that I have not, mine are of less time than that.

The President: I want to ask a show of hands of all those who have grown Crimson Rambler four years and have got a good growth, there are two, three, four. I want to get a show of hands of all those who have grown Crimson Rambler one year and have it die the next. There, that tells the story.

Mr. Toole: How many persons are there here who have grown a whole lot of things and have had them die the first year?

The President: No, but I have repeatedly grown them.

Mr. Moyle: I have been tempted several tims to get up to talk along this line. I tell you where all this trouble lies. It has been advocated here that we have all our roses on their own roots. Now, the Crimson Rambler on its own root is a common failure. I do not say this from my own experience, I say this from the experience where we propagated roses up to 150,000 at a time, and we found it necessary when we got a Crimson Rambler rose to have it budded always. So, when you have your Crimson Rambler budded, the next thing is to plant it low down, so as to have this stock protected, and then when you get your stock properly protected, your rose will live from year to year. They will grow beautifully, but on their own root they are never a success.

Mr. Edwards: I think Mr. Moyle is exactly wrong. I have found 500 that are doing glorious work on their own roots. I have sworn off on roses on budded stock, that is, for this part of Wisconsin. I know the Crimson Rambler is a success on its own roots.

Mr. Moyle: I think this gentleman is in the same fix as I was last spring; I ordered a few hundred roses on their own roots, when I grew them they were all budded.

Mrs. Trelevan: I do not think any rose will stand the abuse that a Crimson Rambler will.

Mr. Cranefield: I generally swear to everything that Mr. Moyle says when we are away from home, and he to what I say. But I have a Crimson Rambler rose at my house, it is today about ten feet across, about 12 feet high, and bore last year over 9,000 blossoms at one time, over 9,000 blossoms, on its own roots.

Mr. Wilkins: If there is anything I boast of it is my ignorance of the nursery business, but the matter of the Crimson Rambler has come to me this way,—it is more in the care of the rose than it is in the rose itself. Prof. Cranefield has just boasted that his Crimson Rambler rose has borne 9,000 blossoms, —next year it will die. Here is the trouble with Crimson Rambler when it blooms heavily one year, it will over-bear. If you trim your rose and cut a part of the bloom, it will live. If you allow it to bloom it is like a three-year old appletree fruiting itself to death. Do not let them bloom too hard until they get old.

A Member: How do you cover it?

Mr. Wilkins: Just as any other rose.

Mr. Periam: I have got a Crimson Rambler on its own roots in Chicago, it is as hard a country as you have got here; we have no protection, but I wanted to state on the point made by the gentleman who professed dense ignorance on the subject of nursery stock,—now the plant is four years old, I have had three successive lots of flowers on it as thick as the clusters could stand on it and it is now at the top of the veranda and running on to the roof, and there have been three crops as heavy as the plant could possibly bear, so that the first heavy crop does not always kill. But the Crimson Rambler wants strong fertilization and I think it wants a sandy soil.

Mr. Edwards: I want to answer this gentleman; I tell him I know the difference between a budded rose and an own root rose. An own root Crimson Rambler will not do good work the first year, but when it gets its system established it will do excellent work and it will bear successfully for several years.

Mr. Lewis: I would like to say one word about this budding. You must not take it for granted that all roses ought to be budded, nor all roses should not be grown on their own roots. Take for instance the Jacqueminot, strong wiry roots, they are just as well, or better, on their own roots. But when you come to some of these stiff, hardy growers, it is almost impossible to strike them to make cuttings. Root them any way you like, you have to bud them to get a stock, and they do so much better when you have than will some other roses. Therefore you must not say because this is budded and that not, this is good and that not. It depends on the class of roses, so much.

The President: I was more particularly interested in the Crimson Rambler, because I heard so much of it that I tried to get a Crimson Rambler to grow. I have bought repeatedly roots from different dealers all over the United States. I made one grow all summer once and it lived through the winter and then the second year I had two feet of growth and just a few blossoms, and then it died.

Mrs. Trelevan: I disagree with Mr. Periam about planting it on sandy soil. I have one planted in clay and gravel and it does finely, but I kept it well pruned. I think that is the fault, we let it have too much wood.

Prof. Cranefield: The way I view it is this,—the Crimson Rambler is not wholly hardy in Wisconsin, it requires some winter protection; after they are well established I think it will stand as much, if not more than the average hybrid. In my experience I have seen but little difficulty in starting plants, in getting them well established, whether budded or on their own roots. The rose I speak of, the finest in Madison, is on its own roots, because I propagated it myself, I can swear to it, and I know there is equally as vigorous life, not quite so old, on budded stock, so I hold it makes but little difference, the main difference is in the soil and care.

Mr. Lewis: They talk about Ampelopsis Vitchii. I would like to ask your opinion. In Milwaukee Ampelopsis Vitchii will live and thrive and cover large spaces. Here, in this section of Wisconsin it is a hard matter to get them to live through the winter. Do you attribute it to the difference in cold between this and Milwaukee or what is the difference?

Mr. Toole: I attribute it to the like influence that we fruit growers find, often we can grow along the lake, further inland we can not.

Mr. Lewis: I think it is the handsomest, on account of its neat foliage, its density, its adaptability for holding on, and taking everything into consideration, I think it is the most beautiful climber we have. I tried several times and last winter put a covering over one, and I suppose now it is 15 to 20 feet high. I shall cover again this winter and I am very anxious to save this vine; if I knew what were best I would do it. I have thought it would succeed best if I were to graft it.

Mr. Toole: I do not think that would help you, because the matter is in the upper growth and not in the root. I would say, if you get more of our native species which cling to the walls, and such can be obtained,—I like it, it stands out, it is not so smooth to the wall, it stands out so luxuriantly, but I like our native species better then the other.

Mr. Morris: I would like to ask whether the Chinese ivy will kill a tree by growing up around it. We have one that is probably 30 feet high, and the tree has the appearance of dying, and we think of cutting the vine down.

Mr. Toole: I think it will, from my own experience, with a young, growing tree. I have a case where native ivy climbed a tree and I feel satisfied I will probably lose the tree; it was gone so far before I noticed it, I shall probably let it go. If I wanted anything in the way of growth effect on a tree I should like to choose a creeper instead of the ivy.

Mr. Roe: I should like to ask if there are any of these vines that do better on a south exposure or north or west exposure, or which exposure would you put a Crimson Rambler on, if you had a house?

Mr. Toole: If I had the choice of the Crimson Rambler I would like to use the east exposure, but I think the Crimson Rambler will stand any such aspects as you would say, the Crimson Rambler will be very slow. But on the other hand, if you want a vine that will thrive well in bleak places, then I will say not to choose any kind of rose.

Mr. Roe: If you want to put a vine on the southern exposure, what kind would you use, if you wanted lots of vine?

Mr. Toole: If you wanted lots of vine, and a permanent one, by all means use our American ivy. On the northwestern corner, well exposed to the wind I have our American ivy, at the south end of this western porch I have the climbing Bitter-Sweet. I have a south porch towards the east end of the house where I choose to plant annuals, and my favorite there is the Snow-Ball.

Mr. Roe: Is the southern exposure too hot for a rose?

Mr. Toole: Well, I have seen some doing well. I think if you can have them stand out a little from the building, on a trellis, or, still better, on the porch, I should say, no, it was not too hot for a rose.

AMATEUR CANNING.

R. R. Remington.

Mr. President, Ladies and Gentlemen:

I wish to assume you, in beginning this discussion, that the term Amateur is strictly applicable to my standing as a canner and that my experience has been gained mostly with small fruits grown upon my own farm; my relation to the canning business is much the same as that of a farm dairy man to the creamery business, similarly as the farmer produces milk and manufactures it into butter, I grow fruit and market the same in a manufactured form.

It is less than one hundred years since the first recorded attempt was made to preserve food of any kind by anything like modern methods of canning; therefore hoping it may be of some interest the following historical items are briefly submitted.

The first paper on the subject of canning was presented before the English Society of Arts in 1807 by a Mr. Saddington; in this paper the results of preserving fruits in bottles by applying heat and then securely corking were given. In this paper 75 degrees of heat were recommended but the length of time this was to be continued does not appear in the record.

A work on canning by a Frenchman, M. Appert, appeared in 1810 for which he received a prize of 10,000 francs from the French government.

Oysters were packed in Baltimore in 1838 or 1840. In 1842 in Portland, Maine, Isaac Winslow began packing corn. A patent for his process was applied for in 1853 but was not granted until 1862. The first recorded sale of canned corn was invoiced February 19, 1848, and was for one dozen canisters preserved corn at $4.00.

These historical facts were gathered by Mr. F. O. Conant and embodied in a paper presented by him before the annual Canners Meeting held at Cincinnati in February, 1897.

To sum up the history of the canning art, it has been known experimentally nearly 100 years; it has come into use practically during the last 40 years.

The evolution of ideas about the art of canning is a matter of considerable interest and develops some facts not easy to explain. Winslow must have met with some success with 75 degrees of heat; ten years ago boiling heat or 212 degrees was considered sufficient even for corn if continued for four or five hours, now 250 degrees for about ten or fifteen minutes after that degree is reached is considered the right thing.

Previous to the rise of the canning industry other methods of preserving food were in vogue such as drying, smoking, the use of salt, or of sugar in liberal quantity. In all methods of preserving foods except one the efforts of those seeking commercial advantage have been paralleled by efforts of the housekeepers in almost every home in the land for the preservation of foods, especially fruits, for household consumption, and with such success that now the so-called self-sealing glass jar is an important adjunct in the economy of every household. By its use is preserved, at least in some degree of natural form and flavor, for farmer and village and city resident the generous summer gift of fruits, wrought out of sun, heat and light, and of rain and soil.

Until very recently the art of canning has been wholly a matter of experiment but as the same experiment has not always been found to produce the same result, the aid of science has at last been evoked to solve if possible the problem of reducing canning processes to a well defined and successful system. The most notable efforts in this matter have been made by Professor Prescott of the Massachusetts School of Technology, aided by Mr. Lyman Underwood, a practical canner.

A paper by Mr. Prescott read at the annual meeting of the Atlantic States Packers' Association at Buffalo in February, 1898, offers the following scientific deductions: Nature seems to furnish an abundant supply of minute vegetable forms known variously as microbes, bacteria, etc. These organisms are divided according to their form into three general classes, viz.: those that are round, those rod shaped, and those of spiral form. Some, at least, are endowed with the power of motion. They multiply very rapidly by division or by spores. By their activity some produce gas, some acid from sugar. They cause what we call fermentation. Twenty thousand rod-shaped microbes might lie side by side on a line an inch long, and they pervade air, water and every product or commodity that we use as food. Only a few of these organisms are disease producing but all are the enemy of the canner's business but are friendly enough to makers of yeast, bread, wine, bur, vinegar and other fermented products, and are a fundamental necessity to all higher vegetable life for they furnish nitrogen in the soil to sustain plant life. It is the business of the canner to prevent the bacteria from continuing operation in the fruit jar; this may be done by using sugar in large quantity thus creating an unfavorable condition or by applying heat enough to destroy the germs at once.

Antiseptics such as boracic acid, salicylic acid, etc., are also used more than is desirable by some manufacturers, hence the laws in various states regulating the use of such means. The use of antiseptics is not at all to be favorably considered. The idea of embalmed fruit is second only in a sense of aversion to that of embalmed beef.

Fortunately for the housekeeper bacilli in their normal condition are easily destroyed by boiling heat; but some are at times in the spore form, an inactive state in which they are much more resistant and can survive boiling heat for several hours and finally, under favorable conditions, resume offensive activity. There is no defense against the spore form of these organisms except the steam heated retort of the professional canner whereby a higher degree of heat than 212 is gained. To sum up the requirements for successful canning, fruit must be sterilized by heat.

Two hundred and twelve degrees maintained for a short time will be in most cases sufficient. Corn requires higher heat as the substance is not so good a conductor of heat as fruits which contain more fluid. Length of time to some extent takes the place of a higher degree of heat. Fruit must be sterilized also the can and cover. The can must be closed and made airtight while hot; these conditions complied with means general success, but is not absolute assurance.

We will now consider what the housekeeper may do to insure this degree of success in canning. Fruit should be neither too ripe nor too green. There is reasons to believe that most kinds of fruit are best cooked in the jar, but this method is of greater advantage with some varieties than with others. Strawberries and other juicy fruits do not fill the jars sufficiently when cooked in this manner. Raspberries, both red and black, are especially adapted to this method; their flavor is best preserved and also the color and form of the red berries. Probably the Mason glass jar is most widely used of any; its cheapness recommends it; it is convenient in a measure; its disadvantages are a metal cover in contact with the fruit and its often imperfect finish at the shoulder or place where the rim of the cover meets the jar, and another disadvantage, lack of durability of the cover. Glass-topped jars are neater in appearance. No one can accuse the Mason jar of being pretentious in appearance, but its top is pliable enough to allow gas to escape in case of fermentation whereas some glass tops are fastened so rigidly that fermentation bursts the jar. Tops of Mason jars are sometimes sharp on the edge and cut the rubber; this edge may be made smooth by use of a flat file drawn across; the file touching opposite sides to insure uniformity. The frequent slight ridge on the shoulder of the jar at opposite sides may be removed by the same file. The rims of old covers that have been forced out of shape can be turned back to place by using a small hammer and the edge filed as before, making the cover much more easily and securely adjusted.

For cooking fruit in the jar the following apparatus is recommended, viz.: A steamer made of galvanized iron 12 inches high and 12 inches in diameter, covered top and sides with asbestos, a movable platform three inches high in the bottom, a tight fitting cover on the top. About two inches of water below the platform will supply steam for the cooking process.

For preparing the jar for the steamer the fruit is first filled in and warm syrup of suitable degree of sweetness poured in to a height of one inch below the top. Covers are laid on the jars but not screwed on. One hour is sufficient time for most fruit to be over the fire, the larger portion of the time being used to gradually bring the fruit to a boiling heat. The appearance of the fruit not the time, however, must be the guide in determining when the cooking is completed.

To seal the cans set the steamer off the stove and set out one can at a time; the first two or three should stand a moment before closing to allow the steam to get out of the jar so they can be filled with additional hot syrup to insure a full jar when cold. After the seven cans contained in the steamer are all closed, they should stand ten minutes and the covers again be tightened, but never after they have become cold enough to hold comfortably in the hand. If fruit is to be canned in quantities more than one steamer may be used and placed on the stove and taken off in rotation.

Apples and other fruits that do not can well in the jar and go to pieces in the open stew kettle may be cooked in a graniteware pail that fits the steamer and afterward dipped into previously heated jars, thus only the desired amount of liquid can be used and at the same time the form of the fruit preserved.

Canned fruit should be inspected every day for two weeks, and should be kept in a cool cellar.

Lastly if Mason jars are used the covers should be painted with a mixture of aluminum paint powder and varnish, this gives a touch of brightness to the package that harmonizes well with the pleasing nature and appearance of its contents and preserves the cover from corrosion.

It is hoped that if these suggestions prompted by a varying experience during several seasons of canning, do not strongly recommend themselves at this moment, that they may, by some one, be kindly remembered at some future time of preparation for fruit preserving, or during the time of the warm and often vexatious work, or finally some weeks later, when with great satisfaction, the attractive appearance of the winter store of fruit for the household, is observed, and the fact is noted that the vicious little microbe disturbs neither your fruit nor your peace of mind.

DISCUSSION.

Mr. Toole: I noticed that you remark that the length of time cannot be properly determined, it is more the appearance of the fruit. What should be the appearance of the fruit, or in what way do you determine the length of time that you keep up the temperature?

Mr. Remington: Suppose we are canning a jar of raspberries, any one will soon learn by practice, by canning them, by steam heat in this way, that it requires 35 minutes, or maybe 40, according to the amount of fire, to get the fruit up to the boiling point, and at that time, or shortly after that time it is well enough to look at that fruit. All you have to do is to lift the cover of the steamer, take some fruit out and examine it, select some of the greener appearing berries and try them, if they are soft, then lift up the jar and look at it; this syrup will be clear, there will be very little of the syrup out at this time, or some time afterward. Raspberries in the first part of the season, very fresh, very sound, if they have raised up two or three inches from the bottom, it is pretty likely they are cooked; later in the season perhaps a little less cooking will do, but I judge very largely by the distance those berries will rise in the jar.

Mr. Toole: How do you lift those boiling hot jars out of that deep kettle.

Mr. Remington: When I get ready to seal them up, set the steamer off on a bench and in a very brief time the steam will cease to rise, and there is very little trouble to take them out. There are patent devices, but it is very easily done with a cloth after the steam stops rising. I might say that fresh cans of fruit should never be put in while the steamer is on the stove, because the rise of the steam will be apt to crack the jar. No trouble at all if the water, no matter how hot it is, is not boiling.

Mr. Toole: Did you ever try the method of simply pouring boiling water on?

Mr. Remington: I have tried it but it was a failure.

Mr. Toole: We have tried that for several years with good success,—poured the syrup on the top, the syrup is poured on the fruit hot, so it does not take as much heat to bring to the proper temperature, then pour the boiling hot water on and leave it standing for several hours until it is cool enough to put the cans away.

Mr. Remington: That would be certainly a very great advantage if it could be successfully done, but I should very much hate to risk a thousand cans in that way. I have trouble enough now, do the best I can and give it lots more heat than that.

Mr. Periam: In what state of ripeness would you can the berries?

Mr. Remington: Every kind of berry is at its best when canned at its very prime, and that is quite early in the season; for raspberries and blackberries perhaps not the first of the season, but the second, when they are still firm. A great many people that buy raspberries make a great mistake in postponing their buying to the last of the season, thinking they will be cheaper. That is not true. In the early part of the season, blackberries, for instance, turn them out of the box, they will turn out hard, almost like shelled peas and very loose from each other, don't cling to each other, stand lots of abuse, stand over night without moulding, stand shipping to quite a distance. Later in the season raspberries, blackberries, all the berries, get this jelly-like consistency. Take a box and hold them out in your hand, they will shake like jelly, all that firmness is gone, then when they are cooked they have not the bright color, all the color is gone, much of the tartness is gone, there is a kind of sweet, sickish taste that some people like, but I abhor it.

Mr. Periam: Plums, for instance, take Burbank and Abundance and that class of plums?

Mr. Remington: Never had much experience with plums.

Mr. Smith: I would like to ask the gentleman if he has had any experience with canning vegetables, such as asparagus?

Mr. Remington: Never tried vegetables, that is a matter for professional canners, although some housekeepers do succeed. There is a great deal of mystery about this canning business. I was told of a lady in Baraboo a short time ago who cuts up string beans, puts them in a jar, pours could water over them, screws up the top and they are all right. They won't do that for me, I am satisfied.

A Member: Rhubarb will keep that way.

Mr. Remington: I know rhubarb will sometimes, and sometimes it won't. I think a little depends on the size of can and variety of microbe that is in it.

Mr. Toole: Some years ago the matter of tying cotton batting fresh from the store over fruit, putting it on tightly, was tried. I remember trying it with tomatoes and it was a perfect success. The only drawback is, you must be careful about tipping, because if the liquid once gets through the cotton batting, you have a medium of communication with the bacteria. The dry cotton batting perfectly strains the air and keeps the germs of ferment out.

The President: You would not advise that?

Mr. Remington: You certainly could not ship them that way. I have also heard of instances of that kind where blackberries were kept in that way, were put in stone jars and covered with cotton batting or paper. I would not recommend it; I should be very fearful to undertake such an experiment as that on a large scale, it would be all right on a small scale.

FERTILIZATION OF FLOWERS.

Miss Jennie Chappell.

Of the 110,000 flowering plants known to exist, every flower however common we may consider it will reveal a floral construction that is wonderful. Until Darwin's time very little was known of flowers and it is through the successive researches of different botanists that we have gained our present knowledge of blossoms.

Let us examine the different parts of a flower by looking at the diagram. Fig. 1. The caylix encloses the bud, and may be tubular or composed of separate leaves or sepals as in the rose.

The corolla or colored part may consist of several petals as in the rose or of a single one as in the morning glory, next comes the stamens, few or many, the anthus at the extremity containing the yellow powdery pollen. At the center is the pestel or pistils. This is divided into three parts, ovary, style and stigma.

Though it may seem strange now, the botanists of the past were content with a simple description of the flowers without the slightest idea of their function. In 1682 Nehemias Grew made the announcement that it was necessary for the pollen of a flower to reach the stigma that there might be fruit. This led to interesting discussions and much research among the botanists of those times. Finally Linnaeus reaffirmed the facts of Grew and was able to prove his statements so that all were led to believe.

In most flowers the stamens were seen to surround the pistil and the pollen was shed upon the stigma, but in their search many other problems confronted them, as the function of the honey, the bees, the color and the fragrance. These searchers after knowledge became more and more mystified.

There were many speculations in regard to these subjects and even the great Linnaeus confessed himself as puzzled. Nothing new was learned of flowers for about fifty years, when Sprengle in 1787 began making investigation based upon the color marking of petals, nectar and visiting insects. In watching his honey guides he found that spots, rings and converging veins upon the petals showed the location of honey. He worked at this for three years, then gave to the world astonishing facts. The discoveries of the others were right as far as they went, but he had gone still farther for in many flowers the stamens were below the stigma, it was then impossible for the pollen to reach the stigma, except by artificial means. He then announced that:

1. Flowers are fertilized by insects.
2. Insects in approaching the nectar or honey brush the pollen from the anther with the various hairy parts of their bodies and in thin motions convey it to the stigma.

But strange instances were arising, he was met with floral problems as the pollen being ripe in the flower and the stigma not ready to receive it, while other flowers, the pollen was shed and the stigma just matured. In many cases too the stamens are in one flower and the pistils in others as in cucumber and corn.

He *thought* that the pollen of one flower must be carried to the pistil of another but failed to find that such was the case.

Sprengle was confronted with another fact, why should the flowers attract the insects when in many cases they might fertilize themselves.

The unfinished work of Sprengle was taken up by Darwin and brought to completion. He simply showed that the bee flew from the ripened pollen to the matured stigma. He then demonstrated that flowers were not only fertilized by insects but were cross fertilized. The pollen carried from flower to flower of the same plant or of different plants. Darwin also proved by hundreds of experiments that cross fertilized flowers produced healthier seed than self fertilized. We trample the beautiful flowers under our feet, now and then admiring one, but never think of the lesson they with their allies are teaching us.

But after learning this what revelations are borne to us. This spot upon the petal, the perfume, the form and color, how wonderful to know that each and all represent an affinity to some insect. The flowers seem to have made a contract with the different insects according to their needs, thus we see a flower with the long nectary visited by the butterfly, the orchids with the eleven inch nectary visited by a moth with a tongue eleven inches long, flies fertilizing the trillium, honey and bumble bees each having special flowers. But these insects are not the only agents transferring the pollen; birds, water and wind do their part, the wind doing it very imperfectly, although it has been known to carry pollen four hundred miles. Every summer we may see the air laden with pollen from the oak, willow, poplar and many plants. If we compare the flower of the blue flag or of the lily with its spotted yellow petals with flower of the many forest trees, we shall shall see the difference between the bright blossoms which depend entirely upon the insects for their fertilization and the dinginess of the flowers whose marrier has been the wind. From this time on flowers and insects will be found together as each seems indispensable to the other. It is interesting to note the manner in which the different flowers receive their insect visitors, one gives the little fly a dab of dust in the eyes, others give to the sipping bee the pollen to his tongue, another attaches a similar token to the tongues of moths and butterflies, while others send the gnat out with a sticking plaster smeared all over its back. As a rule their ceremonies of the blossoms are of the briefest description. Occasionally the insect is entrapped for life as in the milk weed. Or the gnats that visit Jack in the pulpit are detained for a while though many perish.

Our research in cross fertilization has taught us that bees visit the flowers of the same species as long as they can before going to another species, it has caused us to see that the purpose of the bright colors, large size and odor is to attract the insects, white blossoms use a very strong odor to attract moths that fertilize them at dusk.

We have found that the dark colored streaks serve as guides to the nectar. Yes, and from the structure of the flower we may even foretell the insect to which the cross fertilization is committed. How wonderful does nature work, we fail to understand the design in the construction of even the commonest flower until we await the coming of its chosen insect worker, the one for whom it has been adapting itself for ages. Thus we find the red clover owing its existence to the bumble bee; the parts of the flower are arranged with a definite relation to the head and honey sucking tube of the bee, which can not visit it without dusting themselves with pollen from one blossom which they rub off on the receptacle of the next blossom.

Many years ago the farmers of Australia determined to introduce our red clover into that country, the first imported seed thrived with luxuriant foliage and blossom but no seed. Why? Simply because they had no American bumble bees. Upon the introduction of the bumble bee the clover flourished in fruition as well as bloom, which demonstrates that the clover and bumble bees are inseparable counterparts.

To be successful operators in their lines of work it is quite if not very necessary, that the farmer, the gardener and the horticulturist should thoroughly understand and make a study of fertilization. I would refer all to Darwin and Gibson from whom I have gained information. Only recently I heard a farmer say that a certain variety of corn had run out, as I was interested, began to investigate and found that he had two varieties of sweet corn and dent corn planted in the same field and had been continuing this practice for years, during the time the wind had done its work, consequently the mixed sweet corn.

On the experimental farms each variety of corn is planted by itself at a considerable distance from another variety and carries on its own fertilization. If a new variety of seed is wished the pollen from the largest, most thrifty stalk is carried by the hand to another variety looking equally well, here we have hand fertilization.

If gardeners desire to raise their own seed the greatest of care should be practiced in planting the varied assortments at a distance. Darwin says that he planted three varieties of onions near together, when the seedlings were raised all were mixed. Several varieties of radishes were in flower at the same time, seed was collected and from the seedlings very few were true to their kind. The same was found true of cabbages.

Many fruit trees are not capable of performing their own fertilization, each horticulturist should be conversant with the fact and have the remedy at hand. There are certain plums also the Bartlett pear. In a large orchard of Bartlett pears only the outer ones were bearing fruit, upon investigation it was found that insects were fertilizing these from an entirely different variety.

The United States could not compete with foreign countries in its production of dried figs until within the last five years. The Smyrna fig has led the dried fig market of the world, but the Smyrna fig could not be successfully raised in California and it was found that the fig trees of the Mediterranean country were fertilized by a little insect bringing pollen from a wild fig tree which it inhabits. The department of agriculture imported insects from the Mediterranean country and placed them in an orchard of California containing 5,000 Smyrna and wild fig trees and in two years it had increased to such an extent that it fertilized thousands of figs and 15 tons of them ripened, after being dried and packed they were found to be superior to the best imported figs, thus a new industry has sprung into existence, through the help of the insect.

There is much that might be more interesting, but I will desist with this thought from Gibson "That the flower is no longer a simple passive victim in the bee's sweet pillage but rather a conscious being with hopes, aspirations and companionship."

Mr. Periam: Mr. Chairman, I do not think that that admirable paper requires any discussion, from the scientific standpoint it is one of the most interesting papers that I have ever read, and from the application of science to common matters it is pretty nearly complete. I move you, sir, that a vote of thanks be given the lady for the admirable paper.

Carried.

EVENING SESSION.

The President: We will now listen to the report of the judges on fruit.

APPLES.

A. D. Barnes, Waupaca, 1st premium, Golden Russett, McMahon, Scott's Winter, St. Lawrence, Greater Duchess, Tetofsky, Hibernal, Rose; 2nd premium, Longfield, Display of Apples.

Mrs. Jos. Trelevan, Omro, 1st premium, Walbridge, Repka Melenka, Antonovka, Enormous, Fall Orange' Newell's Winter; 2nd premium, Golden Russett, McMahon, Tallman Sweet, Hibernal, Pewaukee.

R. T. Darrow, Omro, 1st premium, Fameuse, Sweet Russett; 2nd premium, Walbridge, Grimes' Golden, Transcendent, Wolf River.

Mrs. W. E. Thrall, Omro, 1st premium, Tallman Sweet, N. W. Greening, Alexander; 2nd premium, Hass, Price's Sweet.

M. V. Sperbeck, Oshkosh, 1st premium, Hass, Whitney, Price's Sweet, Utter's Red, Wolf River, Yellow Transparent, Duchess, Display; 2nd premium, Fameuse, N. W. Greening, Briar Sweet.

S. G. Floyd, Eureka, 1st premium, Florence Crab, Stark, Grimes' Golden, Perry Russett, McIntosh; 2nd premium, Fall Orange.

R. P. Roe, Oshkosh, 1st premium, Lubsk Queen, White Russett, Winnebago, Roes' Golden; 2nd premium, Wealthy, McIntosh; 3rd premium, Display.

Marcia Howlett, Oshkosh, 1st premium, Pewaukee, Early Strawberry, Yellow Bellflower; 2nd premium. St. Lawrence.

Mrs. G. T. Cook, Omro, 1st premium, Longfield, Plum Cider, Bailey Sweet, Northern Spy, Transcendent; 2nd premium, Antonovka, Whitney.

A. B. Frees, Omro, 1st premium, Wealthy, Patton's Greening.

C. A. Abbott, Appleton, 1st premium, Switzer.

W. P. Bussey, Omro, 1st premium, Briar Sweet.

Wm. Toole, Baraboo, 1st premium, Red Russett, Red Astrachan.

PLUMS.

E. E. Sheldon, Omro, 1st premium, Blue Damson, Bradshaw, Yellow Gage.

J. B. Noyes, Oshkosh, 1st premium, Green Gage, Lombard.

S. G. Floyd, Eureka, 1st premium, Cheney, De Sota; 2nd premium, Lombard, Moore's Arctic.

Wm. Toole, Baraboo, 1st premium, Baraboo, Moore's Arctic.

Display of plums, 1st premium, S. G. Floyd; 2nd premium, E. E. Sheldon.

L. G. Kellogg,
Judge.

The President: We will now listen to the report of the judges on flowers.

REPORT OF JUDGES ON FLOWERS.

Greatest Variety of House Plants—Mrs. Geo. Buck, Omro, 1st premium; Mrs. Jos. Trelevan, Omro, 2nd premium; Mrs. E. Stead, Omro, 3rd premium.

Fuchsias in Bloom.—Mrs. Geo. Buck, Omro, 1st premium.

Geraniums.—Mrs. Beo. Buck, Omro, 1st premium.

Begonias.—Mrs. Geo. Buck, Omro, 1st premium; Mrs. E. Stead, Omro, 2nd premium.

Out-Door Carnations.—Wm. Toole, Baraboo, 1st premium; C. Phillipson, Oshkosh, 2nd premium.

Hanging Basket and Plants.—Mrs. E. Stead, Omro, 1st premium.

Natural Ferns.—Mrs. E. Stead, Omro, 1st premium.

Gladiolus.—Wm. Toole, Baraboo, special premium.

Lawn and Veranda Vase.—Mrs. Geo. Buck, Omro, 1st premium.

Display of Cut Flowers.—Mrs. L. W. Barnes, Waupaca, 1st premium; T. E. Loope, Omro, 2nd premium.

Perennial Phlox.—T. E. Loope, Eureka, 1st premium; Mrs. L. W. Barnes, Waupaca, 2nd premium.

Gladiolus.—T. E. Loope, Eureka, 1st premium; H. C. Christianson, Oshkosh, 2nd premium.

Roses.—T. E. Loope, Eureka, 1st premium.

Dahlias.—T. E. Loop,e Eureka, 1st premium; Mrs. L. W. Barnes, Waupaca, 2nd premium.

Wild Flowers.—Mrs. E. Stead, Omro, 1st premium; Marcia Howlett, Oshkosh, 2nd premium.

Phlox Drummondi.—J. B. Noyes, Oshkosh, 1st premium.

Pansies.—Wm. Toole, Baraboo, 1st premium; Mrs. L. W. Barnes, Waupaca, 2nd premium.

Verbenas.—Mrs. W. E. Thrall, Omro, 1st premium.

Petunias.—Mrs. L. W. Barnes, Waupaca, 1st premium.

Stocks.—Mrs. L. W. Barnes, Waupaca, 1st premium.

Floral Designs.—Mrs. L. W. Barnes, Waupaca, 1st premium; Mrs. W. E. Thrall, Omro, 2nd premium.

Sweet Peas.—Mrs. L. W. Barnes, Waupaca, 1st premium; C. Philipson, Oshkosh, 2nd premium.

Asters.—Mrs. Sarah Tieman, Eureka, 1st premium; Wm. Toole, Baraboo, 2nd premium.

Chinese Pinks.—C. Philipson, Oshkosh, 1st premium.

JONATHAN PERIAM,
WM. HALL,
Judges.

Mr. Marshall: Mr. President, I move that a vote of thanks be extended to the Omro Horticultural Society, and the good citizens of Omro, for what I think is the most successful meeting of this Society that I have ever attended.

Carried.

The President: I am very much obliged for the attention and interest displayed here; it has been a very beautiful session to me, and I think to everybody. I now wish to turn over the balance of the program to Mrs. Trelevan.

The subject assigned to me, "The Farmer's Daughter a Help in Beautifying Country Homes," is a very broad subject.

We all love that which is beautiful and attractive to the eye. In traveling through some of our large cities, we often express ourselves in saying, Oh, what a beautiful city, simply because our attention has been attracted by its cleanliness, by its large buildings, beautiful residences and well kept lawns, etc., but first I would speak to you, of what our home is, or should be.

We all love the word home, around it clings our dearest association, our best affections. The bond of family life is so strong and sacred, the attachment we feel for home is so deep in our hearts, that no matter what may be the problems we care more to be at home than anywhere else in the world.

If you have been away from home for a time you may know the feeling of home sickness. You know what it is to say of a certain place "I don't feel at home there," you mean that you are not happy, and then say with joy in your heart, "I am going home," and you return with delight to your own home, and to your friends who understand you, a happy home, a happy childhood in one's home are among the best things in life.

The years at home are important because in childhood and girlhood you are forming habits which will influence your entire life. Home is a training ground for life. Home life may be very much what you make of it yourself. Your nature, your character, will influence the life of others, and make happiness, or the reverse, cheerfulness and brightness are duties at home.

A son or daughter fails in duty if they listen to one who encourages them to disregard the wishes of their parent or near relatives. People will not admire or respect a son or daughter who disparages their own family or home, or who tries to put their parents in the background and push themselves aggressively forward.

We must admit that too many our country homes are not as attractive as they should or could be.

Just let us travel into the country, no matter in what part of the state it may be, where we come into a good farming district, we come to a farm where the soil is fertile and everything points to a prosperous farmer—but how do we find his home?

A weather-beaten farm-house which has not had a coat of paint applied for many years, the yard littered with rubbish and other unsightly objects which remain there from one year to another, grass and weeds remain uncut, and where do you find the farm buildings, a hog-pen a few rods on one side, stable on the other, wagons and other farm machinery left unprotected in the door yard—of course the wood pile occupies a prominent place in the front yard—not an ornamental tree, flower, vine or shrub to be found, and upon stepping into the house we find the inside to be as uninviting as the outside has been. Now this farmer has no taste for beauty, except of the yellow variety that tinkles and is bankable. Has this kind of a home any pleasures and any attractiveness for this family?

We pass on a short distance farther, and to the next farmer's home and the first thing we observe is an attractive farm home. The house neatly painted, a beautiful lawn occupied by ornamental trees, flowers, shrubs and vines, the grass kept shortly cut, not a weed to be seen, all the farm buildings some distance in the rear, with everything in its place, and all the buildings neatly painted.

We enter this house where we find everything neat and tidy, and everything indicates a beautiful and happy home. This farmer only has natural taste for beautifying his home and grounds, with no special training, and here we feel at home at once..

We must admit that a farmer is busy from early morning until late at night, and does not always have the time to beautify his home and grounds as he would like to.

Some may think in order to have an attractive home, it will require a large outlay for a modern building and the necessary furnishings. Here is where too many make a mistake, a little log house may even be made beautiful and attractive.

I believe that the successful beautifiers of the country homes as well as the promoters of its interests must be found among the youths born and bred on the farm.

Too often we hear of the farm boy or girl leaving the country home to escape its hum-drum life, and to enter the hurley-burley life of the city with its new scenes and interests, to obtain its better fortune.

Now the problem is how can we make the farm life more attractive, thus enabling the country young folks to live in as wide a realm as the city's youth. I believe no realm is so wide for a genuine, scientific understanding of nature's forces' as that called Horticulture.

Why should not the farm youths be enabled to see the process of tree or shrub growth and have attractiveness put into their occupation by growing plant life. Let them get such knowledge and the city life soon becomes hum-drum in comparison with that on a beautiful farm.

Nothing adds more in beautifying a country home than the so-called Horticulture and Floriculture.

Every farmer should try and do something in a practical way to increase the beauty of his home and surroundings, we should cultivate the useful and also the beautiful, we owe it as a duty to ourselves, our families and to the community at large.

Now to us a home without a garden, without a few fruit trees and small fruits, and numerous beds of choice flowers, and a well kept lawn would be only half a home. Now how can farmers' daughters assist their parents in beautifying their country home. One of their first duties of life is the respect towards their parents, and where they are so respected the parents will always listen to the plans of their children.

If a home is not as attractive as it should be, let her offer suggestions to her parents to help in bringing about a change of improvement.

Let it be her duty to assist in cleaning up the yard of all rubbish and other unsightly objects.

If there are any small buildings in or near the door yard (of which some farms have many), let her persuade her father to remove the same in the rear, there is not a farm which has not plenty of room for such small buildings, without having them placed in the door yard. Now, after the yard is cleaned, let it be her duty to keep the lawn in a good, and clean condition, and also let her see that the back door yard is kept as clean as the front door yard, and where the lawn is bare of trees, let her help in making a selection of a few ornamental or native trees, which will add greatly to the beauty, also the same is true of shrubs and flowers. Let her attend to the various flower beds. There are many flowers that are readily grown from seeds, and also the vines—they are so attractive and handsome either trailing or climbing.

If the house or farm buildings are in need of a coat of paint, let her speak to her father about this until he hears nothing but

"Paint," "Paint," "Paint," and the result will be that the buildings will soon be painted.

You will find that nothing is drudgery if done in the right spirit. If you can relieve your mother from care, please your father and win your brothers to spend the evenings at home, your efforts will be delightful in themselves, and uplifting to your mind and heart. Take the trouble to have everything as dainty and pretty as possible in your home, you know how to arrange the furniture, pictures and flowers or to prepare a good meal. Remember, a daughter in a home may be a grand blessing and treasure. She will make home beautiful by little nameless, unremembered acts of kindness and love.

Every son or daughter should regard their father as something more than a mere machine to provide money for them to spend. If a daughter is in need of something useful she asks her father, and straightway he opens his purse, you accept the gift as a right, but will it not seem sweeter to you if you are grateful in thoughtful attentions. Have a gift ready for your father on his birthday, flowers for your mother on hers.

We are all here to bring our thoughts and ideas together, to see in what measure we may be able to beautify our county, and make of it a veritable Garden of Eden.

Horticulture has done much to make this country the Garden Spot of which we are all so proud. We ought to set our mark high as we are living in a progressive age.

"Let us keep Horticulture to the front."

Let it be our desire and our aim to beautify our homes. Who has not observed the wonderful change in beautifying our public school grounds since Arbor Day has been set aside by our state.

I would suggest that Horticulture and Floriculture in addition to Agriculture be taught in our public schools, then let the teachers of the rural districts teach the little country boy and girl how they can assist in beautifying their country homes. If this is done it will be but a short time to note the change of improvement.

IN MEMORIAM.

B. F. Adams died of pneumonia, February 6, 1902, at the home of his son, H. C. Adams, in Madison, Wis.

Benjamin Franklin Adams was born December 4, 1822, in Verona, Oneida Co., N. Y. In 1845 he graduated at Hamilton College and afterward taught Greek for two years at the academy in Hamilton. In 1848 he moved to Fort Atkinson, Wis., and shortly afterward to Stoner's Prairie in Dane Co. Several years later he went to Beaver Dam, then to Liberty Prairie in the town of Pleasant Springs, where he lived fourteen years. In 1873 he bought a fruit farm near the western border of Madison. A part of the farm has since been platted into city lots and is comprised in the suburb known as Wingra Park. He was Member of the Assembly from the First District of Dane County in 1862 and again in 1872.

Soon after moving to his fruit farm Mr. Adams joined the Wisconsin State Horticultural Society and continued an honored member until his death, although for a few years past failing health had debarred him from active participation in the discussions of the Society. At the annual meeting held in Madison in February, 1885, he was elected vice-president and also superintendent of exhibits, and was re-elected to both positions for several consecutive years.

In the death of Mr. Adams the Wisconsin Horticultural Society loses one of its ablest members.

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